The Evidence-Based Research Network

IF I HAVE SEEN
FARTHER, IT IS BY
STANDING ON THE
SHOULDERS OF
GIANTS
[ISAAC NEWTON]

4th Evidence-Based Research Conference

Abstract Book

9 September 2024

Prague, Czech Republic

Time (CEST)	9 September 2024
9:00-9:10	Welcome
9:10-10:30	Plenary - EBR Across Disciplines
	Chair: Hans Lund
	Speakers: Jan Minx Terri Pigott Hugh Waddington
10:30-11:00	Break and e-posters
11:00-12:00	Oral Presentations
	Chair: Karen Robinson
	"Identifying Research Priorities in the Sexual and Reproductive Health of Adolescents and Young People (15-24) from Refugee and Migrant Backgrounds." *Zohra Lassi*
	"Establishing an evidence ecosystem to facilitate evidence-based research on first aid training in low- and middle-income countries." *Irvin Kendall*
	"Discrepant Effect Estimates in Randomized Clinical Trials between High-Income and Low/Middle-Income Countries: A Retrospective Cohort Study." *Yuanxi Jia (presented by Karen Robinson)*
12:00-13:30	Lunch
13:00-13:30	EBR Network Annual General Assembly
13:30-14:30	Oral Presentations
	Chair: Karen Robinson
	"A cross-sectional survey among health researchers in Europe on factors influencing the use of an evidence-based research approach." Joanna Zając
	"Exploration of artificial intelligence integration and reporting in protocols of systematic reviews: a cross-sectional metaresearch survey." *Paweł Jemioło*
	"Research priorities for public health and social measures to manage epidemics." *Heather Munthe-Kaas*
14:30-15:00	Break and e-posters
15:00-16:30	Plenary – EBR Beyond Global North
	Chair: Klara Brunnhuber
	Confirmed Speakers: Joseph Matthew Patrick Okwen Morankar Sudhakar
16:30-17:00	Closing – conference 2025, next steps…

ORAL Presentations

Identifying Research Priorities in the Sexual and Reproductive Health of Adolescents and Young People (15-24) from Refugee and Migrant Backgrounds.

Zohra Lassi[1], Patience Castleton[1], Gizachew Tessema[2], Humaira Maheen[3], Zelalem Mengesha[4]

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Abstract

AIM: Australian health care systems do not have a strong, research-based understanding of the sexual and reproductive health (SRH) care needs of adolescents and young people from refugee and migrant backgrounds, despite their well-documented poorer SRH outcomes. This research priority exercise will notify stakeholder and consumer priorities for SRH service delivery, thus informing SRH program's that can be embedded into public health systems that promote positive SRH care engagement.

METHODS: Existing literature was summarized into research questions, fitting under five key SRH domains, that participants were asked to rank in an online survey based on their importance and representation in research. A shortlist of 25 questions was discussed in a field expert meeting and a second survey asked responders to further prioritize these questions to reach the top 10 SRH research priorities.

RESULTS: 33 stakeholders and consumers responded to at least one round of the exercise; the most predominant demographic was heterosexual women. At least 9 consumers were represented in the surveys and held largely similar beliefs of research priority areas as the stakeholders. From the 1st survey, 25 key questions mainly focused on SRH risk factors, vulnerabilities, and outcomes and access to youth-friendly SRH care were identified.

CONCLUSION: SRH stakeholders and adolescents and young people from refugee and migrant backgrounds agreed that SRH risk factors, vulnerabilities and outcomes are underrepresented in research. Future research and public health policy should focus on these priority questions to improve SRH care engagement and health outcomes.

Establishing an evidence ecosystem to facilitate evidence-based research on first aid training in low- and middle-income countries

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Abstract

Aim: To generate and identify scientific evidence for the development of topic- and context-specific first aid training in low- and middle-income countries (LMICs).

Methods: We established an evidence ecosystem where the different steps in the synthesis, translation, and production of scientific evidence on first aid training in LMICs are linked together in a cyclical relationship. More specifically, within this framework, we conducted three studies simultaneously, i.e. a systematic review, an evidence-based guideline, and a randomised controlled trial (RCT), in which the knowledge acquired from each study informed the next study, while actively involving the relevant stakeholders.

Results: Based on priority exercises and end-user information, we decided to conduct a systematic review on the effectiveness of first aid training for laypeople (on educational and health outcomes), and an evidence-based guideline on first aid training for road traffic injuries. From the review and implementation of the guideline, a gap in knowledge emerged regarding the impact of first aid training and the application of blended learning teaching modalities in LMICs due to a lack of RCTs in these settings. This led to our RCT on the effectiveness of first aid blended learning training in resource-constrained settings. Context-specific information for the design of the RCT, such as outcomes, measurement tools, drop-out rates, clustering effect, was retrieved from previous SRs and other primary research.

Conclusions: The establishment of an evidence ecosystem facilitates the interaction between secondary and primary research, and in combination with the involvement of stakeholders, ensures relevant and necessary research in resource-constrained settings.

Discrepant Effect Estimates for the Same Outcomes Designated as Primary versus Secondary in Randomized Clinical Trials: A Retrospective Cohort Study

Yuanxi Jia[1], Karen Robinson[2], Jinling Tang[1]

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Abstract

Background

The effect estimates for the same outcomes designated in RCTs as primary outcomes (P-RCTs) should be consistent with those designated in similar RCTs as secondary outcomes (S-RCT). However, researchers paying extra attention to primary outcomes may lead to higher effect estimates from P-RCTs.

Method

We included meta-analyses assessing the efficacy of health interventions in the Cochrane Database of Systematic Reviews between 2021 and 2023. Eligible RCTs were those with recruitment in or after 2006 and negative control (placebo, sham, no intervention, etc). Within each meta-analysis, RCTs designating the meta-analyzed outcome as primary outcome were P-RCTs, while those designating the meta-analyzed outcome as secondary outcome were S-RCTs.

The P-RCTs were compared to S-RCTs using two-stage random-effect meta-analyses: the effect estimates from RCTs were transformed into ORs; within each meta-analysis, the ORs from P-RCTs and S-RCTs were combined separately and compared as a ratio of ORs (ROR); the RORs were combined across meta-analyses. ROR larger than 1 indicates a larger effect estimate from P-RCTs.

Results

Among 221 meta-analyses with 1,602 RCTs, P-RCTs produced larger OR in 153 (69.2%), and the ROR was 1.26 (95%CI: 1.17-1.35). Meanwhile, P-RCTs produced larger OR in 69 (69.7%) of the 99 meta-analyses with 450 prospectively registered RCTs, and the ROR was 1.20 (1.08-1.34).

Conclusions

P-RCTs produced higher effect estimates than S-RCTs. Researchers using prior evidence to inform current RCTs may need to note if an outcome was designated as primary or secondary in a trial and interpret results considering the undetected bias.

A cross-sectional survey among health researchers in Europe on factors influencing the use of an evidence-based research approach

Joanna Zajac[1], Sabine Van Eerdenbrugh[2], Luca Pingani[3,4,5], Tamara Prevendar[6,7], Tella Lantta[8,9], Anna Prokop-Dorner[10], Maria Piedade Brandão[11], Tina Poklepović Peričić[12], Joost van Hoof[13,14], Hans Lund[15], Małgorzata M. Bala[16]

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Abstract

Aim: This explorative study was conducted to find out how well the concept of evidence-based research is known among European health researchers with substantial clinical research experience, and which factors influence the use of an evidence-based research approach.

Methods: This cross-sectional survey study was conducted among European health researchers. Respondents were 205 physicians, nurses, dentists, and allied health researchers (including dieticians, occupational therapists, physiotherapists, speech-language therapists, and psychologists) with a Ph.D. or at least five years of research experience.

Results: We discovered that 84.4% of the respondents indicated their familiarity with the concept of evidence-based research. Nevertheless, more than one fifth of them (22,5%) concluded that, upon reading the definition, they either do not know or do not fully comprehend the concept of evidence-based research. The main factors influencing the use of an evidence-based research approach were related to organizational issues, such as not being attributed resources, time, or access to implement it.

Conclusions: Despite the limitations, this study clearly shows that ongoing initiatives to raise awareness about the importance of implementing evidence-based research in health research are necessary. This paper contributes to a discussion of the issues that obstruct evidence-based

research implementation, such as providing the necessary tools and information about assessing the quality of evidence and conducting literature reviews systematically and efficiently.

Exploration of artificial intelligence integration and reporting in protocols of systematic reviews: a cross-sectional metaresearch survey

Paweł Jemioło[1], Dawid Storman[2], Małgorzata Bała[2]

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Abstract

Aim: This study aims to evaluate the intention to use artificial intelligence (AI) and to adhere to checklists including AI-related elements in protocols of systematic reviews (SRs).

Methods: We investigated the EQUATOR Network and analyzed 62 checklists related to SRs and protocols to identify those that included any AI-related items. Next, we searched Medline for protocols of SRs published in August 2023 to assess the usage of these checklists.

Results: We discovered only three reporting checklists containing items on any AI-related issues — PRISMA 2020, TRIPOD-SRMA, and living evidence checklist (https://doi.org/10.1016/j.jclinepi.2022.09.020) for SRs, and none for protocols. Following deduplication, we screened 4,402 records (2 reviewers independently), leading to 3,320 potentially eligible studies being selected for a full-text assessment. From this selection, we identified 68 protocols for current analysis. In 41.2% of protocols, there was no plan for using any reporting guidelines. Authors of 23.5% of protocols planned to use PRISMA 2020 for their reviews. Surprisingly, in 16.2% of papers, authors intended to apply old version of PRISMA (2009), which does not cover AI. Only two protocols reported on using AI tools. Classifiers built in Rayyan and EPPI-Reviewer were planned for screening of titles and abstracts.

Conclusions: In a substantial number of protocols, outdated reporting checklists were intended to be followed, while many protocols did not mention using any reporting checklists. Despite the presence of AI-related items in checklists, the plan to apply AI tools in SRs is sparse.

Research priorities for public health and social measures to manage epidemics

Heather Munthe-Kaas, Petter Elstrøm, Tone Bruun, Andrew Oxman

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Abstract

Background

Prioritizing research to examine important uncertainties related to the effects of public health and social measures to manage epidemics can help to avoid research waste and ensure that future decisions are better informed.

Methods

We used a multi-method approach inspired by the nominal group technique and the James Lind Alliance approach to develop a list of public health and social measures and research priority criteria. We solicited research questions from relevant stakeholders and applied the priority criteria to arrive at a list of important research questions related to managing future epidemics.

Results

We reached consensus on 16 prioritized research questions addressing 22 public health and social measures.

Conclusions

A systematic and transparent approach to prioritizing future research, including consensus methods and developing priority criteria, was used to arrive at a list of 16 research questions to address important uncertainties related to the effect of public health and social measures for addressing future epidemics

e-POSTERS

Automatically updating SIPHER's Employment and Health Evidence Gap Map searches: a case study

Zak Ghouze[1], Hossein Dehdarirad[1], Ruth Wong[2], Linda Long[3], Fiona Campbell[4]

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Abstract

Background: SIPHER's evidence and gap map (EGM) presents 239 systematic reviews (2010-2021) exploring the relationship between employment and health outcomes. Reviewing was supported using EPPI Reviewer and a visual map created using EPPI Mapper software. Without updating the searches, the EGM would become out-of-date. This case study attempts to compare manual searching (five databases) versus an automated approach to updating the EGM via retrieval of studies from OpenAlex, a single repository of over 250 million records from 250k sources.
Methods: Building on the initial searches made in 2021, manual searches were conducted in October 2023. Our original search string was also applied using EPPI Reviewer's "search and browse" function, to search OpenAlex's "live" dataset (via the API). A comparison is made between manual update search versus EPPI Reviewer's update review functionality.
Results: The manual update searches resulted in 862 records. OpenAlex searching in EPPI Reviewer syntax differs by wildcards, phrase searching, field searching with limits in the number of records that can be combined. Records retrieved from various translated search strategies using EPPI Reviewer's search facility ranged from 179 to 30K results.
Conclusions: The search function works directly on the current OA database, so the results can change from moment to moment. Despite the high number of records retrieved from searching OpenAlex, the next step is to develop an automated model that can run and find "related items" to studies already included in the review and thus screen the large number of records retrieved.

Trustworthiness and impact of covid-19 trial preprints for decision making

Dena Zeraaktar, Tanvir Jassal

McMaster, Hamilton, Canada

Abstract

Aim: During the COVID-19 pandemic, decision-makers enthusiastically adopted preprints to allow for the rapid dissemination of potentially lifesaving research before publication in peer-reviewed journals. The medical community, however, has been cautious about the adoption of preprints because they may contain important errors. We assessed the trustworthiness and impact of trial preprints during the covid-19 pandemic.

Methods: We capitalized on data from a living systematic review of therapeutics for COVID-19. We compared the characteristics of COVID-19 trials with and without preprints, estimated their time to publication, and described differences in reporting of methods and results between preprints and their later publications. For the effects of key therapies, we performed meta-analyses including and excluding preprints and assessed the certainty of evidence using the GRADE framework.

Results: Of 356 trials, 101 were only available as preprints, 181 as journal publications, and 74 as preprints first and subsequently as journal articles. The median time to publication of preprints was 6 months. There were few important differences in key methods and results between trial preprints and their published reports. Except for two comparisons (2/60), point estimates were consistent between meta-analyses including versus excluding preprints. For nine of 60 comparisons, the rating of the certainty of evidence was different when preprints were included versus excluded—the certainty including preprints was higher for four comparisons and lower for five.

Conclusion: We did not find compelling evidence to suggest that preprints provide results that are inconsistent with published reports.

Comparison of Effect Estimates between Non-inferiority and Superiority Randomized Clinical Trials: Retrospective Cohort Study

Yuanxi Jia[1], Karen Robinson[2], Jinling Tang[1]

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[2]School of Medicine, Johns Hopkins University, Baltimore, USA

Abstract

Background

Non-inferiority randomized clinical trials (NI-RCTs) and superiority RCTs (S-RCTs) addressing the same research question should produce consistent effect estimates. The objective of this study was to compare effect estimates between S-RCTs and NI-RCTs, assessing similar interventions, control, patients, and primary outcome measures.

Method

We included meta-analyses identified from Cochrane reviews that assessed the efficacy of clinical interventions with established benefits. In each meta-analysis, S-RCTs were selected as the exposure group, and NI-RCTs in the control group. The primary measurement was the ratio of risk ratio (RRR), the ratio of hazard ratio (RHR), or the ratio of odds ratio (ROR, with OR transformed from standardized mean difference) between S-RCTs and NI-RCTs in each meta-analysis. RRRs, RHRs, and RORs were combined across meta-analyses to form a single estimate.

Results

56 meta-analyses were identified, including 378 RCTs (74 NI-RCTs and 304 S-RCTs). Among meta-analyses using OR, RR, and HR, S-RCTs produced an effect estimate 1.51 (95%CI: 1.11-2.08), 1.15 (95%CI: 1.06-1.24), and 1.13 (95%CI: 1.01-1.26) times greater than NI-RCTs, respectively. On average, S-RCTs produced an effect estimate 1.26 (95%CI: 1.15-1.38) times larger than NI-RCTs. When adjusting for the potential confounders, S-RCTs produced an effect estimate 1.12 (95%CI: 1.04, 1.22) times larger than NI-RCTs.

Conclusions

S-RCTs may produce an effect estimate 26% larger than NI-RCTs, implying the impact of bias on RCT results and posing a serious challenge to researchers using prior evidence to guide new RCTs.

Discrepant Effect Estimates in Randomized Clinical Trials between High-Income and Low/Middle-Income Countries: A Retrospective Cohort Study

Yuanxi Jia[1], Karen Robinson[2], Jinling Tang[1]

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[2]School of Medicine, Johns Hopkins University, Baltimore, USA

Abstract

Background

RCTs in low/middle-income countries (LMICs) frequently produce inconsistent evidence from high-income countries (HICs). This study compared the effect estimates from RCTs between LMICs and HICs.

Methods

Meta-analyses from Cochrane reviews between 2018 and 2023 were included if assessing the efficacy of health interventions. Only RCTs recruited participants after 2006 and used a negative control, e.g., placebo or no intervention, were included. In each meta-analysis, the exposed group consisted of RCTs sponsored by and enrolling participants in LMICs, while the control group consisted of RCTs sponsored by and enrolling participants in HICs.

The effect estimates were compared between LMICs and HICs using two-stage random-effect meta-analyses: the effect estimates in RCTs were transformed into odds ratios (ORs); within each meta-analysis, the ORs from LMICs and HICs were combined separately and compared as a ratio of ORs (ROR); the RORs were combined across meta-analyses. ROR larger than 1 indicates a larger OR from LMICs.

Results

1,005 RCTs (423 from LMICs and 582 from HICs) were identified from 140 meta-analyses. The overall ROR was 1.73 (95%CI: 1.44-2.08). The ROR decreased to 1.04 (0.87-1.24) when restricted to RCTs with a low risk of bias.

Conclusions

RCTs from LMICs produced higher effect estimates than HICs, with the difference substantially ameliorated for RCTs with a low risk of bias. Researchers using prior evidence to inform new RCTs should be aware of the discrepancy in RCT effect estimates between LMICs and HICs that may be driven by bias rather than populational or economic factors.

Developing a semi-automation system to update SIPHER's Employment and Health Evidence Gap Map

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Abstract

Background: SIPHER's evidence and gap map (EGM) presents 239 systematic reviews exploring the relationship between employment and health outcomes. Reviewing was supported using EPPI Reviewer and a visual map created using EPPI-Mapper. EGM updates require new searches, screening, and coding. This case study describes developing a custom binary model from existing (screened) sets of items, used to assess the likely relevance of new items.

Methods: Models were created using EPPI Reviewer's Machine Learning algorithms, trained on existing screening data, then applied to new items, classifying them according to likely relevance. A comparison was made between human screening versus the performance of the model's results.

Results: Models built on the original data sets had variable results when predicting the human screening of later search results, understandable given that different screening criteria and personnel were used by the original and later groups.

However, models built on human screening of later search results, then applied to other items and compared with further human screening using consistent screening criteria, were found to be useful, giving a good agreement rates.

Conclusions: ML models usefulness in this review varied, reflecting real-world circumstances mentioned earlier (changes in personnel, changes in screening criteria). However, with fine-tuning, models could still be useful in this scenario. Given a consistent set of screening criteria, models were significantly more accurate. We will refine models with more human screening data and combine them with Large-Language Model automatic coding, ultimately leading to automated updating of the EGM using new references programmatically pulled from online databases.

Physical therapies for delayed onset muscle soreness: an umbrella and mapping systematic review with meta-meta-analysis. A meta-research study within an EBR project

Szczepan Wiecha[1], Maciej Płaszewski[1], Paweł Posadzki[2,3], Robert Prill[4], Joanna Zając[5], Maciej Cieśliński[1], Paweł Wiśniowski[1], Wojciech Pawliczek[1], Igor Cieśliński[1]

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Abstract

Aim. A number of systematic reviews, SRs, evaluating physiotherapeutic approaches, PTs, for delayed onset muscle soreness (DOMS) have been published since the 1990s. They yield conflicting findings, further impeding clinical practice.

Methods. An umbrella review with meta-meta-analysis. Medline, Embase, Cochrane CDSR, PEDro, and Epistemonikos were searched from 1998 to January 2024 for SRs of RCTs of any treatment used post-exercise by physiotherapists to reduce DOMS in healthy adults. AMSTAR-2 was used to evaluate the methodological quality of the included SRs. Corrected covered areas (CCAs) were calculated to address overlaps. An evidence map was created, based on the effect size and strength of evidence (Class I-V based on the number of cases, p-value, heterogeneity, Egger's test, and excess of significance bias).

Results. Twenty-nine SRs with 863 unique RCTs, addressing 24 distinct PTs, met the inclusion criteria. Seventeen of the SRs were of critically low methodological quality, with only two high-quality SRs. Significant effects immediately post-exercise, 24, 72, and 96 hours post-intervention were observed in contrast to cold therapy and cryotherapy, massage, electrical stimulation, phototherapy, compression, and, kinesio taping,. The effect size (Hedges' g) ranged from 0.36 (95%CI 0.46, 3.18) for cold therapy to 1.82 (95%CI 0.46, 3.18) for heat therapy, Class III or IV for most interventions

Conclusion. The findings may be attributed to the high methodological heterogeneity of RCTs, the significant internal variation in the therapies, and the methodological weaknesses of the SRs.