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Editorial

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Dear colleagues,

In my role as guest editor for this issue, I have the pleasure of writing this editorial for *JEAHIL*, a journal dedicated to the vibrant community of medical librarians and health information specialists in Europe. In this issue, we focus on the pivotal role that medical libaries play in supporting evidence syntheses – an area that continues to evolve at the intersection of information science and healthcare.

The first article "Supporting systematic, scoping and other types of reviews: workshops and services offered by the Medical Library at Charité" brings us to Berlin, Germany, where our colleagues from the Medical Library at Charité have pioneered a comprehensive workshop series. This eight-part initiative offers participants a deep dive into systematic and scoping review methods. The article outlines each workshop session, detailing preparation requirements, content covered, and the challenges faced by both learners and the teaching team. The success of this initiative underscores the crucial role medical libraries play in providing much needed education and guidance for evidence synthesis.

In the next article, "High precision but variable recall – comparing the performance of five deduplication tools", my colleague Heidrun Janka from Düsseldorf, Germany, ventured into the realm of deduplication methods. The study compares the performance, core features, and time efficiency of five frequently used automated and semi-automated deduplication tools. As we explore tools ranging from reference management software to machine learning-driven solutions, this research provides valuable insights into the efficiency and accuracy of the deduplication process inherent to all search efforts for systematic reviews, offering a roadmap for medical librarians in the time-consuming and challenging task of managing duplicates in searches supporting the conduct of evidence syntheses.

In our final piece related to this issue´s topic, called “Brief communication concerning the implications of algorithmic indexing in MEDLINE", our colleagues from Montréal and Ottawa in Canada shed light on the new algorithm used to assign Medical Subject Headings to the MEDLINE database. As information professionals, our ability to navigate the intricacies of generative algorithms and their implications, is crucial. This piece provides an easily-digestible and amusing read about their findings of unusual indexing that they noted in the course of regular MEDLINE searches and student consultations.

Last but not least, our colleagues from Spain provide "An overview of information instruction in hospital libraries in Spain", which we also include in this issue as relevant to our work, because information instruction is essential for providing support for clinical care, teaching and research in hospitals.

The evolving landscape of evidence synthesis production requires our constant commitment to staying informed and educating ourselves and our users, as well as embracing new solutions while also evaluating them critically. May these articles inspire and empower you in your vital role at the forefront of healthcare information. Wishing you a joyful and informative reading.

Sincerely,

Maria-Inti Metzendorf
Health Information Scientist and Guest Editor

Supporting systematic, scoping and other types of reviews: Workshops and services offered by the Medical Library at the Charité

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Abstract
Medical libraries have become central in evidence synthesis conduct. The Medical Library at the Charité in Berlin, Germany, initiated "Systematic/Scoping Reviews", an eight-part workshop series designed to provide comprehensive education and guidance on systematic and scoping review methods. Each session covers a specific step of the review process and offers participants who are conducting a review active engagement in the methodological steps using their own review question. This article provides a summary of each workshop session, outlining preparation requirements, workshop content, and challenges faced by both participants and the teaching team. The workshop series has been well received by participants and has proven to be a valuable complement to the portfolio of health information literacy trainings offered by the Medical Library.

Key words: *systematic reviews; scoping reviews; evidence-based medicine; curriculum; information literacy.*

Introduction

In the field of evidence-based practice, systematic reviews are consistently regarded as the highest level of evidence (1). If conducted rigorously, they are extraordinarily valuable to stakeholders who make clinical and policy decisions, and are highly esteemed due to their comprehensiveness and methodological rigor (1, 2). While systematic reviews are integral in evidence-based medicine, evidence synthesis is not limited to this review type.

The field of evidence synthesis is growing exponentially and rapidly developing. The COVID-19 pandemic served as a catalyst for a steep rise in the publication of rapid reviews (3). In response, there have been efforts to develop standardization of both the definition and methods of rapid reviews (4). Other review types have also been undergoing methodological refinement including scoping reviews (5) and pre-clinical systematic reviews (6). In 2022, Amog and colleagues had identified over 40 different evidence synthesis methods, each of which serves a distinct purpose and has different variations of involved steps (7). Proficiency in each of these methods is built with experience and complex to develop without implicit training. This notion is further accelerated by the availability of more and more automation tools which have potential to facilitate the process. However, these tools are in their infancy, with questions remaining in regards to their future capabilities, underlying mechanisms, and commercialization.

The most prominent bodies that provide methodological guidance for evidence synthesis are Cochrane (1), the Campbell Collaboration (2), and JBI (formerly known as the Joanna Briggs Institute) (8). All recommend that researchers elicit the early collaboration of an information specialist or medical librarian when planning a review.

The role of libraries and information specialists

Academic libraries are important resources for those conducting evidence synthesis within research settings (9). Libraries have the infrastructure in place to maintain high volumes of current information and on-site experts with specialized training that is not limited only to skills in knowledge management. These individuals

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– often referred to as "information specialists" – harbor valuable expertise including knowledge of tools, databases, and best practices, all of which are required to conduct high-quality synthesis studies (10). Information specialists have a deep understanding of databases and tools that can facilitate a comprehensive review (11). Moreover, their experience with reviews equips them with knowledge to assist subject experts effectively with research question refinement and bias mitigation during the review process. Information specialists themselves can take on many roles in the systematic/scoping review from reference manager to principal investigator (10).

Due the instrumental role of information specialists in the review process, university libraries can quickly become very saturated with requests for support (12). Therefore, the goal should be to equip learners with the necessary knowledge and tools to be able to perform a review themselves.

Services at the Medical Library at Charité - Universitätsmedizin Berlin

To satisfy this high demand for information specialist support at Charité – Universitätsmedizin Berlin in Germany, its Medical Library offers a variety of health information literacy services tailored to students, researchers, and clinicians. These workshops and training sessions are offered for open-source and licensed databases and tools including PubMed, CINAHL, and EndNote. The Medical Library concurrently introduced the workshop "Systematic searches and the first steps of a systematic review" and consultation sessions to students and faculty to advise on searching and review methodology in 2022, see *Box 1*. These offerings are typically available monthly or bi-monthly during the semester in either English or German. However, there remained a persisting need for an even more intensive option for systematic/scoping review education and guidance.

Box 1. Health information literacy offerings of the Medical Library at Charité – Universitätsmedizin Berlin in 2022

- *Introduction to PubMed:* 90-minute workshop where basics such as the PICO framework, MeSH thesaurus, truncation, and other functionalities are taught
- *Citation management with EndNote 21*: 90-minute workshop
- *Systematic literature searches and first steps towards a systematic (scoping) review*: Intensive 180-minute workshop that covers the importance of the research questions and different types of reviews, frameworks other than PICO, synonyms, thesauri, database functionalities, handbooks and guidelines
- *Consultation*: Up to three 60-minute one-on-one sessions with an information specialist can be booked by Charité members to receive personalized feedback on their review project
- Publication services and services concerning Open Access are available
- *Cochrane Interactive Learning: Conducting an Intervention Review* (13): 15 hours, self-paced, on-demand online training module by Cochrane that can be licensed by libraries and that provides an introduction to systematic review methodology
- *Systematic/Scoping Reviews*: In-depth 8 part workshop series (each session lasts approximately 2.5 hours), for details, refer to the text

Systematic/Scoping Reviews – an 8 part workshop series

The Medical Library launched an eight part workshop series in the summer of 2022 to provide comprehensive systematic and scoping review methods education and guidance in a medium-sized group setting. Each session provides an interactive overview on a separate methodological step of the review process and applied exercises that require participants to engage with their own review question.

The general setup and requirement of the workshop series are outlined in *Box 2*.

Box 2. General setup and requirements of the Systematic/Scoping Review workshop series

Set-up
- Moodle for online management and assignment submission
- Application process reiterating requirements and prerequisites
- If interest exceeds the number of available places, admission is randomized

Prerequisites for admission (applicants must fulfill one of the following):
- Employees of the Charité with a completed university education who are demonstrably working on a systematic review/scoping review during the duration of the workshop series
- Students in a Master's program at the Charité who have registered a review as their thesis
- Medical/dental students at the Charité who have completed the 2nd science module, have a doctoral contract with the Charité, and plan to work on a systematic review/scoping review as their project

Conditions participants agree to:
- On-site participation must be possible, but some sessions will also take place via Microsoft Teams; availability of a camera and active participation in the workshops are desired
- Participants agree to complete pre- and post-workshop preparations promptly
- No final examination
- To earn 1.6 credit points (European Credit Transfer and Accumulation System "ECTS"), participants must attend at least 85% of the scheduled time and submit all required assignments before the deadline (this requirement aligns with the Charité's "Common guidelines for awarding and crediting ECTS credit points in doctoral training at Charité – Universitätsmedizin Berlin)"
- The workshop series is free of charge for participants

Part 1 – Introduction to systematic reviews, formulating a researchable question, and the protocol

PREPARATION: Participants are asked to read an article by Munn et al. (14), which provides an overview of 10 types of systematic reviews and serves as a primer. Additionally, participants must provide their research question in advance so the teaching team can familiarize themselves with the topics. Lastly, they need to write a few sentences on a) why they are conducting a review, and b) the intended end user of the review as a basis for discussion during the workshop.

CONTENT: Part 1 begins with a brief review of course logistics, an overview of the course including learning objectives, participation expectations and requirements, and assignment deadlines. We proceed to cover the importance of systematic/scoping reviews, who conducts them, and the context in which they are conducted. The methodological steps of a systematic/scoping review are described with resources to major guidance and handbooks. The last section of Part 1 is interactive and focuses on researchable questions, non-PICO frameworks, and the importance of protocols.

CHALLENGE: Participants often face obstacles narrowing down their research question. We see that there are difficulties understanding the difference between systematic and scoping reviews (15). Research questions dictate the choice of synthesis method, and we aim to discourage conducting scoping reviews for the purpose of simplifying or speeding up the process.

Part 2 – Databases and systematic search strategies

PREPARATION: Participants are required to refresh their knowledge on basic literature search tools and strategies such as thesauri, PICO, field codes/metadata, and truncation. We specify sections of the "PubMed User Guide" and ask participants to complete three multiple-choice questions. These questions are practical applications based on on common misunderstanding about the search process.

CONTENT: In Part 2, databases pertinent to human health are explored. Steps for developing systematic searches are outlined from frameworks to keyword and search term identification, Since participants have a presumed foundation in PubMed searching, advanced functionalities of MEDLINE® Ovid, Embase Ovid, and CINAHL (EbscoHost) are highlighted. The difference between sensitive and precise searches is discussed. We introduce tools like PubReMiner (16) for search refinement. The workshop is interspersed with exercises where participants apply each step to their own research question.
CHALLENGE: The time it takes to learn how to use the databases and construct a systematic search is often underestimated. This session is often seen as quite "packed". This had led us to increase the preparation (see above).

Part 3 – Advanced search methods, citation management, and screening
PREPARATION: Participants have two weeks to develop a first draft of their systematic search strategy in one database.
CONTENT: Part 3 begins with a lesson on citation searching, grey literature repositories, pre-print registries, and internet searches before moving to a brief review of the EndNote citation management software. We introduce the open-source tool Systematic Review Accelerator (17) and provide step-by-step instructions. Participants then have time to practice using the tool with their own search.
CHALLENGE: Participants have varying levels of expertise with software. We are increasingly receiving inquiries about more advanced tools, including those using automation. It is necessary for the teaching team to balance the desire of some participants to want to learn about these tools while acknowledging that some may be daunted by them. Our experience tells us that most participants do not need advanced tools when conducting their first review.

Part 4 – Peer review of participant protocols and of the search strategies; PRESS Checklist introduction
PREPARATION: Participants are required to submit a draft of their protocol about four weeks after Part 1. The teaching team provides participants with templates that are abbreviated versions of the Template for Scoping Reviews by JBI (5) and PRISMA-P (18) to ensure that participants have a clear understanding of the required elements of a protocol. We also ask participants to provide a first draft of their search string in MEDLINE® Ovid. We request participants to submit their protocol and search string drafts one week prior to the session so that the teaching team can prepare.
CONTENT: The basics of peer-reviewing are introduced, as well as an abbreviated version of the PRESS checklist (19). Participants discuss their protocols in small groups and give each other feedback. The teaching team concurrently provides feedback to each individual.
CHALLENGE: We match participants by topic, review type, or prior knowledge so that they can work in small groups. This way, they can give each other suggestions and gain more knowledge about other topics or approaches at the same time. Every participant receives individual feedback from the teaching team; however, the diversity of review questions presents a challenge for the teaching team.

Part 5 – Methodological study quality and risk of bias
PREPARATION: All participants are asked to read the same published study. For this session, the teaching team selects a randomized controlled trial (RCT).
CONTENT: Part 5 begins with a discussion on validity in the context of a study, the difference between quality and bias, and an introduction to different critical appraisal tools. The workshop then focuses on methods to reduce bias in RCTs and, step-by-step, has participants apply the RoB 2 tool (revised tool for risk of bias in randomized trials tool) (20).
CHALLENGE: We use an RCT as the "gold standard" to discuss bias. This makes the in-class application of a critical appraisal tool effective as well as interactive. Those who plan to appraise RCTs benefit – perhaps also those who work in patient care – and derivations to other analytical study designs can be made (21). However, standards and therefore tools can vary widely (22). In some research domains, no such tools have been developed yet (23). In these situations, we suggest that course participants develop their own critical appraisal checklist that is partly derived from validated critical appraisal tools and guided by methodological standards in their field.

Part 6 – Data extraction and meta-analysis
PREPARATION: None required.
CONTENT: Part 6 starts with a game-like exercise "To extract or not to extract, that is the question!" After discussing potential data items to extract in the context of different review types, different formats and tools are introduced. The second half of Part 6 focuses on effect measures and the basic assumptions of a meta-analysis that are taught conceptually.
CHALLENGE: We suggest different tools for managing data and discuss what kind of data needs to be extracted overall. There are no one-size-fits-all approaches, but we do recommend piloting the extraction form.
Meta-analyses can get complicated fast, which requires support by a statistician. Many questions we receive are outside of the scope of this course. The Institute of Biometry and Clinical Epidemiology at the Charité provides free statistical consulting sessions to Master's or PhD students for their thesis projects, to which course participants are referred.

Part 7 – Other knowledge synthesis methods
PREPARATION: None required.
CONTENT: In the first half of Part 7, we discuss non-statistical synthesis methods of quantitative data in systematic reviews including narrative synthesis, narrative summary, and graphical approaches. We also discuss data collation for scoping reviews while providing several best-practice examples. The second half of Part 7 comprises of a 45-min lecture on the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) method, which is a now established system to rate the certainty of evidence (24).
CHALLENGE: Synthesis without meta-analysis is relevant for the majority of participants conducting a systematic/scoping review. It is challenging to create such summaries that truly provide holistic syntheses rather than simply listing results from independent studies.
Introducing GRADE is rather advanced and only relevant to few participants. In the future, we plan to give participants the option of either the GRADE lecture or an extended working session on non-statistical synthesis.

Part 8 – Critical appraisal of a systematic review
PREPARATION: All participants read the same published study.
CONTENT: In Part 8, the AMSTAR-2 appraisal tool is applied to a published review. Each question of the tool is introduced while using it as a basis to recap each step in the systematic/scoping review process.
CHALLENGE: The participants of the course series work in very diverse fields. It is not possible to accommodate each research field, though we aim to select a paper that is interesting to many participants.

Overall challenges
After having offered the entire workshop series twice, we have identified several overarching challenges. Some participants are not yet routinely immersed in "scientific working" and thus overwhelmed with basic steps and tools. Being unaware of the complexity of the methods, participants often underestimate the amount of time a systematic or scoping review takes. In terms of project management, we advise participants to make a time plan calculating backwards from the submission date and not to forget vacation and turn-around time when feedback is required. During one-on-one consultations, we often clearly articulate the next steps in the process tailored to the learners` knowledge and query.
Performing a review also means having the experience and ability to understand different primary research studies. Projects often have several supervisors, some serving as "topic experts" and the others serving as "methods experts". Topic experts provide necessary input to students. At times, we have experienced tensions between the topic supervisor and specialists in review methods with regards to the appropriate type of review, the number of databases to be included, or the outcomes to be extracted. We provide reassurance when learners outline a decision and reasons for the decision. We encourage transparency and provide resources to support decisions.
Master's and doctoral students have the additional challenge of a very limited or no budget, which can often be prohibitive for recruiting a team of appropriate size to conduct a methodologically sound review.

Discussion

More reviews are being performed each year (25) and educational programs are challenged to remain current with the educational need in this research domain. The method is nuanced and the field is rapidly evolving with automation tools being more accepted (26).

Following the systematic/scoping review process step-by-step, our workshop series incorporates valuable insights gleaned from two years of teaching and advising students, researchers, and clinicians at the Charité. That said, the teaching team requirements for such an extensive workshop series include experience with database searching, expertise in evidence synthesis methodology, and experience in conducting a full systematic and/or scoping review.

A key challenge lies in providing expert guidance and pertinent workshop material tailored to diverse disciplines. While there are now over 40 distinct knowledge synthesis methods (7), systematic reviews remain relatively novel in certain fields such as medical informatics and laboratory research. Keeping abreast of methodological developments and introducing new tools necessitates workshop organizers to stay up-to-date. We plan to offer the eight-part workshop series twice in 2024 for members of the Charité with increased capacity to cater for the interest that we have observed. The positive reception and constructive feedback from participants are warmly acknowledged.

The Medical Library at Charité – Universitätsmedizin Berlin has further developed its services and workshop portfolio to meet an increasing demand. Knowledge about and resources for systematic/scoping review methods and tools can be curated and cultivated in a library over time to become a hub of knowledge – a constant contrary to research groups changing due to resource allocation and members rotating in and out.

Acknowledgement

This paper is based on a talk given at AGMB Annual Meeting in Bonn, Germany in 2023, which was then subsequently written up and published in the GMS MBI (27). Since then, the second cohort finished the *Systematic/Scoping Reviews* workshop series. This paper was revised using ChatGPT (version 4.0)(28).

Conflicts of interest: no financial COI

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High precision but variable recall – comparing the performance of five deduplication tools

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Abstract
Deduplication methods for multiple database searches conducted for evidence syntheses differ in terms of time invested, accuracy, and comprehensiveness of identified duplicates. Deduplication tools can significantly contribute to a more efficient conduct of the search task in evidence syntheses. Widely used tools for deduplication include reference management software (e.g. EndNote), built-in deduplication features in systematic review software (e.g. Covidence, Rayyan), and automated deduplication tools (e.g. Deduklick, SRA Deduplicator). Newer tools leverage machine learning algorithms crafted by information specialists, that encompass natural language normalization and rule-based approaches. We investigated five frequently used automated and semi-automated deduplication tools regarding their performance, core features and time efficiency in comparison to manual deduplication in EndNote using six datasets.

Key words: *systematic reviews as topic; information storage and retrieval; bibliographic databases; algorithms; software.*

Introduction

The removal of duplicate references from extensive systematic searches in different literature databases is a time-consuming and laborious process for authors or librarians supporting evidence syntheses (1). Different deduplication approaches are practiced by author teams, e.g. manual, semi-automated or automated using specialized software. These approaches vary in time-to-be-invested, completeness and accuracy of identified duplicates. Commonly used tools for a multi-step detection of duplicates are reference management programmes (e.g., EndNote (2)) and built-in deduplication features of systematic review software (e.g. Covidence (3), Rayyan (3, 4). However, deduplication processes are not made transparent in all tools and are sometimes error-prone. Newer deduplication tools such as Deduklick (5) and the SRA Deduplicator (6) use machine learning algorithms including natural language normalisation and sets-of-rules created by information specialists. Automated deduplication tools differ in the extent of the automated processes they support and in the additional manual processes required for an accurate and comprehensive detection of duplicates. While Deduklick and Covidence can be classified as "automated tools" in the sense that no additional manual control is necessary for the deduplication process (except file preparation, e.g. creating RIS-files preceding the upload process) – in tools like SRA Deduplicator and Legacy Rayyan an additional manual control of system-detected duplicates is essential, therefore considered semi-automated tools. We aimed to compare and evaluate the core features, performance, transparency and time efficiency of five frequently used manual, semi-automated and automated deduplication tools: EndNote, Covidence, Legacy Rayyan, Deduklick and SRA Deduplicator.

Methods

We used six different datasets by compiling database search results from six Systematic Reviews (*Table 1*) covering various health topics and varying in size between 300 to 1000 records. The records had previously been retrieved from bibliographic databases (MEDLINE via PubMed or Ovid, CENTRAL, CINAHL, LILACS,

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Systematic Review Topics	Databases searched	References retrieved
Fitness to drive in dementia	MEDLINE, CINAHL, CENTRAL, PsycInfo	414
Interventions for people with type 2 diabetes mellitus fasting during Ramadan	MEDLINE, CENTRAL, PsycINFO, CINAHL, ClinicalTrials.gov, WHO ICTRP Database	375
JAK inhibitors for the treatment of COVID-19 patients	CCSR, Web of Science, WHO COVID-19, US Dep. VA	344
Glucagon-like peptide (GLP)-1 analogues as add-on to insulin for adults with type 1 diabetes mellitus	MEDLINE, CENTRAL, ClinicalTrials.gov, WHO ICTRP Database	833
Vegan diet for overweight or obese adults	MEDLINE, CENTRAL, LILACS, Web of Science, ClinicalTrials.gov, WHO ICTRP Database	1002
Vitamin D supplementation for obese adults undergoing bariatric surgery	MEDLINE, CENTRAL, LILACS, ClinicalTrials.gov, WHO ICTRP	966

Table 1. *Systematic Review topics.*

PsycInfo, Web of Science, Cochrane Covid-19 Study Register and also from trials registers (ClinicalTrials.gov, WHO ICTRP Database). We tested each dataset on Deduklick, SRA Deduplicator ("focused" and "relaxed" algorithm), Covidence and Legacy Rayyan to compare the deduplication performance against the manual procedure in EndNote. The manual deduplication used as reference standard was conducted by an information specialist using a 12-step algorithm (7). It was defined as obtaining the same results twice after undertaking two independent deduplication procedures. The core features investigated for each tool included data processing (upload process, data formats accepted, the delivery of deduplication reports informing on all bibliographic details from the datasets removed resp. retained, as well as the database origins displayed in a flow diagram, and on separate export files containing duplicates as well as the deduplicated results), transparency of the deduplication process (e.g. transparency about the database fields being compared as well as the display of all available metadata for identified duplicates) and additional options like the possibility to define keeping bibliographic records from preferred databases. The time-investment required for the deduplication process was measured in minutes and comprised the time for the file upload, the system-detected deduplication and the additional manual deduplication required.

Results

Comparison of the deduplication performance

Table 2 presents the average scores of system-detected duplicates from six datasets for all tools: automated (Deduklick, Covidence) and semi-automated tools (SRA Deduplicator, Legacy Rayyan) in comparison to manual deduplication. For definitions of precision and recall of a tool's deduplication performance see *Figure 1*.

While on average precision for identifying duplicates was very high in all tools except for Rayyan, the recall (sensitivity) varied substantially. Deduklick and Legacy Rayyan were the most sensitive tools according to our

Deduplication tool	Precision ⌀	Recall ⌀
Covidence	100%	76.8%
Deduklick	100%	96.2%
SRA Deduplicator (focused)	99.8%	86.9%
SRA Deduplicator (relaxed)	100%	73.9%
Rayyan	95.5%	99.1%

Table 2. *Average scores for deduplication performance.*

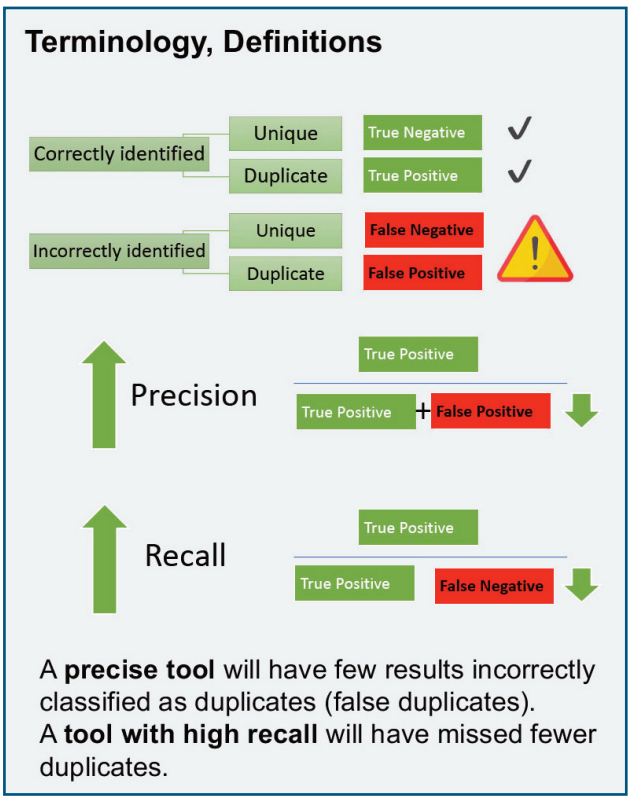

Fig. 1. *Precision and recall for the performance of deduplication tools.*

tests. However, Legacy Rayyan also detected false positive references (therefore precision was lower). The lowest recall (i.e. highest rate of missed duplicates) was measured for SRA Deduplicator ("relaxed"), followed by Covidence. As the SRA Deduplicator is considered a semi-automated tool, additional manual control is generally recommended to ensure better recall. In Covidence, low recall might in part be explained by the limited numbers of database fields being compared for duplicate detection – in contrast to Deduklick in which ten database fields are used. For further details on the comparison of the tools' core features see *Table 3*.
Looking at the deduplication performance in single datasets, low recall was observed more frequently in datasets with larger proportions of records from trials registers (probably because of metadata quality) in comparison to data originating from bibliographic databases.

Comparison of core features

Data processing, transparency of the deduplication process and additional features offered by the tools are presented in *Table 3*. Concerning the data formats accepted for import, EndNote and Legacy Rayyan seem to be the most flexible tools followed by SRA

Features	Covidence	Deduklick	SRA Deduplicator	Legacy Rayyan	EndNote
Deduplication method	Automated	Automated	Semi-Automated	Semi-Automated	Manual
Manual checks	Additional manual check possible	–	Additional manual check recommended	Manual check necessary	–
Data formats accepted	RIS, EndNote XML, PubMed nbib	RIS - preprocessed in EndNote	RIS, EndNote XML, PubMed nbib	RIS, EndNote enw, BibTeX, CSV, PubMed XML, PubMed nbib, CIW	All bibliographic formats
Deduplicated + duplicates files for download	x	✔	✔	✔	✔
Duplicates Report	✔	✔	x	x	x
Database preference + ranking (for import)	x	✔	x	x	(✔)
Database fields checked	TI, AU, YEAR, VOL	TI, AU, TA, DOI, YEAR, ISSN, VOL, PG, URL, AN	Focused algorithm: 10 fields (not named); Relaxed algorithm: 5 fields (not named)	TI, AU, TA, YEAR	12-step algorithm with different field combinations

Table 3. *Comparison of the core features of deduplication tools*

Deduplicator and Covidence. Deduklick currently only accepts merged RIS-files that need to be preprocessed in reference management software. The download of deduplicated reference files and the files containing the duplicates is possible in all tools except Covidence. The latter displays a list of potential duplicate references which can be manually checked, but only with limited bibliographic information (e.g. database sources are missing in the record). The duplicate lists can neither be saved nor downloaded. Comprehensive bibliographic database records for duplicates can be downloaded from Deduklick, SRA Deduplicator and EndNote. Detailed deduplication reports are only available from Deduklick, in addition to flow diagrams displaying the number of references per source before and after deduplication. An additional advantage of this tool is the possibility to customize the database ranking: Deduklick retains unique records from databases providing the most complete bibliographic data and removes duplicates from other databases / sources. The database ranking has been determined by information specialists of the University of Bern, but Deduklick offers customizing this list upon request.

Comparison of time efficiency

Deduklick and Covidence are the fastest tools for deduplication, including file upload and an automated detection of duplicates within 2-5 minutes, depending on the size of the uploaded files (*Figure 2*). All other tools need more time because additional manual work is required. The SRA Deduplicator offers a "relaxed" algorithm which is designed for people who want to spend minimal time with checking the results manually, according to the producers. The risk of mislabeling non-duplicates is low, however, at the expense of missing a small number of duplicates. Legacy Rayyan proved to be the most time-consuming tool, requiring more than one hour of additional manual work, depending on the file size, due to its very sensitive similarity score. It is noteworthy that using this tool required even more time than carrying out manual deduplication with EndNote. In summary, *Table 4* provides an overview of the best-performing deduplication tools according to the different criteria investigated in this study.

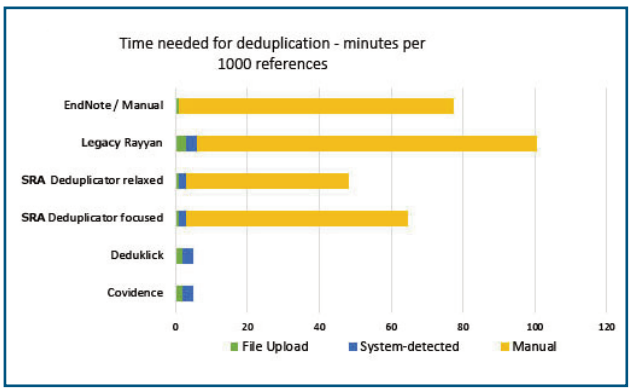

Fig. 2. *Average time efficiency of deduplication tools accross 6 datasets.*

Criteria	Best performing tools
Precision	Deduklick, SRA Deduplicator (focused + relaxed), Covidence
Recall	Legacy Rayyan, Deduklick, SRA Deduplicator (focused)
Time Efficiency	Deduklick, Covidence
Core Features	Deduklick, SRA Deduplicator (focused + relaxed)

Table 4. *Summary of all categories investigated.*

Discussion

In our tests, Deduklick, the SRA Deduplicator ("focused" and "relaxed" algorithm) and Covidence could be identified as the most precise tools for duplicate detection, whereas highest recall was achieved by Deduklick and Legacy Rayyan – in comparison to manual deduplication in EndNote (reference standard). An earlier investigation conducted by McKeown and Mir (8), found Covidence and Ovid to be the most accurate tools (96% and 97%, respectively) for duplicate detection, with Covidence and Ovid* possessing the highest specifity (100%), while Legacy Rayyan demonstrated the highest sensitivity (96%) (8).

The pros and cons of using reference management software for deduplication were also investigated by McKeown and Mir (8). They evaluated EndNote X9,

*As a host and provider of bibliographic databases such as MEDLINE, Embase, PsycInfo etc., Ovid offers a built-in deduplication function on its platform, which enables the user to detect duplicates from searches across various databases available via Ovid. The advantage of deduplication in Ovid is that metadata from hosted databases are structured in a similar way, making it easier to identify duplicates, the disadvantage being that deduplication is only possible for databases available on Ovid.

Mendeley and Zotero. In each tool, the system´s default settings for deduplication were used, but no additional manual deduplication algorithms applied, e.g. Bramer (2) or Wright (7), therefore the results are different and not comparable to ours. Differences in the accuracy of deduplication in their investigation compared to our study may also be explained by the different composition of databases used in the datasets, most importantly, the omission of data from trials registers, which were included in our datasets.

The SRA Deduplicator is one of several tools integrated in the SR Accelerator tool which was designed at Bond University, Australia. The tool aims to speed up several of the processes of systematic review production while maintaining a high degree of accuracy (6). The SRA deduplicator is freely available as part of the suit of tools and offers two different deduplication algorithms ("focused" and "relaxed"). While additional manual deduplication is generally recommended for this semi-automated tool, the "relaxed" algorithm can also be used with its default setting, at the risk of missing a few duplicates but without false positive records labeled (6). In our investigation, the average recall was 74% when applying the "relaxed" algorithm, which results in an average of 26% of records of manual work.

Concerning time efficiency, the two automated tools, Deduklick and Covidence, demonstrate the fastest performance – followed by the SRA Deduplicator. According to Forbes *et al.* (6), the time needed for deduplication of 10 different datasets taken from Cochrane Reviews, with reference numbers ranging between 813 and 3912, the SRA Deduplicator was on the average 330% faster compared to the manual deduplication method in EndNote. This contrasts with our findings, as the average time savings measured by us were around 75% with the SRA Deduplicator (only using system-detected duplicates) compared to EndNote. However, after conducting the additional manual deduplication, the time savings resulted in only 15-20% when compared to manual deduplication in EndNote.

Conclusions

We investigated five frequently used automated and semi-automated deduplication tools regarding their performance, core features and time efficiency in comparison to manual deduplication in EndNote as reference standard. Six datasets, derived from Systematic Reviews and composed of heterogenous bibliographic data from medical databases and trials registers, were tested on all tools. We observed high precision (95-100%) in detecting duplicates for all tools, but variable recall (74-99%). Time efficiency varied substantially between two to five minutes (Deduklick, Covidence) and more than one hour (Legacy Rayyan), depending on the size of files deduplicated, the proportion of automated processes versus remaining manual work, and on the metadata composition of the datasets investigated. Core features that differ between the tools are data formats accepted, the possibility of downloading duplicates and deduplicated files as well as the availability of deduplication reports.

Note: Since our tests in spring 2023 and the writing of this article in February 2024, a new version of Rayyan has been released whose deduplication features have improved. In our text we refer to the "Rayyan Legacy" version.

Conflicts of interest: HJ was involved in the development and testing of the Deduklick tool.

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Brief communication concerning the implications of algorithmic indexing in MEDLINE

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Abstract
As of early 2022, indexing in the National Library of Medicine (NLM) MEDLINE database is performed by an algorithm, MTIA [Medical Text Indexer-Auto], with human curation as appropriate. Deployment of a machine learning classifier, MTIX (Medical Text Indexer-neXt generation) is planned for mid-2024. This brief communication outlines the processes of MTIA and raises concerns about the MeSH (Medical Subject Headings) applied by algorithm. Implications for searchers and educators are briefly discussed.

Key words: *medical subject headings; algorithms; abstracting and indexing; MEDLINE; vocabulary, controlled.*

Introduction

As of early 2022, indexing in the National Library of Medicine (NLM) MEDLINE database is performed by an algorithm named MTIA (Medical Text Indexer-Auto), supplemented "with human curation as appropriate" (1). Briefly, the algorithm determines which Medical Subject Heading (MeSH) terms should be applied to a record by:

- identifying uncommon or specific textwords in the article's title and abstract;
- mapping those textwords to MeSH;
- gathering MeSH which have been assigned to other records with similar uncommon or specific textwords within MEDLINE; and
- ranking the identified MeSH before deciding which to apply to the record.

Several other processes occur within this. As examples: textwords in the title are double-counted, subheadings are preferred to headings when both are available, and secondary analyses to resolve ambiguities are conducted. One such ambiguity is "plaque" – "(the algorithm) currently cannot distinguish between the MeSH terms Senile Plaque and Dental Plaque when it encounters the term plaque during processing" (2). After generating a list of possible MeSH terms, the algorithm "check(s) to see if there is any contextual evidence that we should pick Dental Plaque over Senile Plaque" (2). In addition, it should be noted that unlike human indexers, the MTIA does not consider the journal in which an article appears, the author-suggested keywords or the full-text of an article.

Our evaluation

We began to note unusual indexing in the course of regular MEDLINE searches and student consultations in mid-2022. Closer examination often revealed that these articles had been indexed automatically. Notable examples included:

- "Laparoscopic versus open elective right hemicolectomy with curative intent for colon adenocarcinoma" (3) indexed with only one age group – "Child, Preschool", prompting a resident to tell us "something's wrong with the database, you can't do this with kids";
- "Comparison of robot-assisted and conventional laparoscopy for colorectal surgery for endometriosis: a prospective cohort study" (4) indexed with "Colorectal Neoplasms/surgery" – leading us to question if endometriosis was neoplastic, because the MeSH being wrong was inconceivable to us at the time, and

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- "An exploratory study on support for caregivers of people with vision impairment in the UK" (5) – indexed with no MeSH indicating vision impairment or visually impaired persons.

Two broad concerns arose – educational and functional. As educators, we worried that we would need to revise, moderate or minimize our teaching of MeSH as a reliable indicator of aboutness. On function, we worried about searches. We use filters which rely on MeSH being accurate, and were finding questionable MeSH fairly frequently. We wondered how often a relevant concept might not be present whatsoever in the MeSH terms used to index an article. Operating under time pressures, we have performed MeSH-only searches, albeit with caveats regarding coverage and recency; were those caveats still accurate?

We assembled a team of four librarians from l'Université de Montréal, with years of experience searching to support patient care, literature reviews and knowledge synthesis projects (6-9), as well as teaching literature searching to medical and allied health students. We took a sample of 1000 MTIA-indexed articles from MEDLINE (998 after removing duplicates), blinded ourselves to the actual indexing, read the records' titles and abstracts, and noted what concepts we expected to find in the indexing for each article.

We then un-blinded ourselves to the indexing, and indicated agreement or disagreement. Of the articles that met our inclusion criteria, we found that slightly over half (53%) had been assigned MeSH terms that adequately represented the main concepts present in the article, while 47% had one or more inadequacies in indexing that would have affected their retrieval in a MeSH-only search.

Our preliminary findings, "Exploring the impact of automated indexing on completeness of MeSH terms" were presented the 2023 Canadian Health Library Association - Association des bibliothèques de la santé du Canada (CHLA-ABSC) conference. A full manuscript, with detailed examples of indexing issues, is currently under review.

Conclusions and lessons learned

Our conclusions and lessons learned are:

- although time-consuming, the exercise of reading abstracts and reflecting on expectations of indexing was illuminating. Exposure to articles outside of the demands of any particular search added to our knowledge and expanded our horizons as searchers, increasing awareness of lesser-explored branches and features of the MeSH vocabulary;
- issues in algorithmic indexing cut both ways. The algorithm may apply inappropriate terms; it may also omit appropriate terms. The relative impacts of these issues vary depending on topic;
- as the algorithm has been trained on MEDLINE, oversights or systemic biases may be reproduced in the future. We note two articles ("Open access and predatory publishing: a survey of the publishing practices of academic pharmacists and nurses in the United States" (10) and "Interdisciplinary Cooperation between Pharmacists and Nurses-Experiences and Expectations" (11)) with very close ratios of pharmacist-to-nurse terms (1-to-1 and 7-to-5, respectively); in both cases, the indexing only has *Pharmacists*. We recognize that within MEDLINE, terms for pharmacists are a stronger indicator for the application of *Pharmacists* as a subject heading than terms for nurses for the application of *Nurses* as a subject heading; nonetheless, this is in line with existing under-representation of nurses (12, 13);
- automated indexing cannot "read between the lines" in areas with inherent semantic uncertainty like nursing or patient education. When searching in databases which use algorithmic indexing (MEDLINE and EMBASE, among others) searchers should similarly take care to intentionally incorporate these kinds of ambiguities into their comprehensive searches; for example, using the noisier, less-precise *Hearing Loss* for articles more acutely about *Hearing Impaired Persons;*
- the increasing frequency of revisions to indexing in MEDLINE may result in searches becoming marginally less replicable. A record with the status 'Indexed for MEDLINE' may have some or all of its MeSH terms changed following human curation, with its status unchanging. Previously the MeSH applied to a record seemed more permanent;
- not considering an article's full-text is a very notable shortcoming. Human indexers had access to full-text, and could therefore apply appropriate and relevant MeSH terms for which there was no indication in the title or abstract. Searchers could then find a publication relevant to a particular condition or subgroup despite its or their omission from title-abstract.

Assessing the impact of this loss of indexing depth poses a complex and resource-intensive challenge.

Implications

We have shared our dataset with the NLM, and our preliminary findings with several other health information professional interest groups, notably the Agency for Healthcare Research and Quality (AHRQ) and the Canadian Agency for Drugs and Technologies in Health (CADTH). The NLM has been extraordinarily receptive to communications about specific indexing issues. We recall a vein of gestational diabetes articles, indexed with infants as the only age group, corrected within hours.

As the deployment of a new machine learning classifier, MTIX (Medical Text Indexer-neXt generation) is planned for 2024 (14), engagement by the information professional community can help calibrate and refine automated indexing moving forward.

Algorithmically generated content is increasingly present in many facets of education and health care. As information professionals guiding users through increasingly complex online landscapes, bolstering our knowledge about the underlying mechanisms of generative algorithms – broadly, AI – is of paramount importance. We hope that this brief communication presents easily-digestible examples and red flags*.

*Nota bene: Until we raised the issue, MTIA was indexing "red flags" with *Emblems and Insignia*. This is no longer the case.

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An overview of information instruction in hospital libraries in Spain

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Abstract

Information instruction is essential to providing support for clinical care, teaching and research in hospitals. In the international literature, little has been published about this function of hospital libraries in Spain. This study examines the education activities of Spanish hospitals. A questionnaire about staff, education activities and institutional recognition was distributed via email to Spanish hospital libraries. The data was analysed in February 2023. 84% of libraries provide education activities. The average number education staff is 1.3. Common instruction topics are database searching, citations, researcher identity and scientific journals (quality, impact and publication standards). 83% of libraries are part of the undergraduate medical curriculum, 67% are involved in graduate medical education, and 30% are part of the institutional research plan.

Key words: *hospital libraries; information literacy; continuing education; staff development; medical education.*

Introduction

A hospital library is a library specializing in health sciences that is defined by: being located in a hospital (1); the users it serves (health professionals and students); the services it provides to support clinical, teaching and research activities (2); employing at least one qualified professional librarian (3-7).

Among the services of hospital libraries, instruction in knowledge-based information resources is fundamental to supporting the three key components of the health professions (clinical care, teaching, and research) (3, 8). This is well established in the international literature (4, 8-10), and by the leading organization in the profession, the Medical Library Association (MLA) (2, 3, 11).

In Spain, there is no official body that issues standards for hospital libraries or their education activities. The only example of standards was published in 2019 by BiblioMadSalud, the association of medical libraries in the community of Madrid. These standards include user support and training as a core function for their member hospital libraries (12).

To have the most impact, hospital library instruction must be part of institutional curricula, and support the clinical, teaching and research accreditation requirements of the hospital. For instance, instruction that supports undergraduate and graduate medical education should be supported by curricular standards according to the official medical education requirements published by the Spanish Ministry of Health (13). Since 2015, Spanish graduate medical education requirements have identified the library as the unit responsible for training in scientific information (14).

All hospitals in Spain are required to have research committees. In 2007, the Spanish government created a designation for Health Research Institutes, which are partnerships between hospitals and universities (15). Among the many accreditation requirements of these centres (16) is a requirement for a research training plan (section 2.4).

To date, there have been few studies about the educational activities of hospital libraries in Spain. The only study, from 2021, analysed the activities of hospital libraries and virtual health science libraries (17). A total

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of 150 libraries responded. Of these, 73 libraries (48.6%) carried out instruction. This study was fundamental, since it was the first snapshot of health science library activities in Spain. However, much has changed in the few years since it was completed. There are three major limitations. First, the study was completed prior to the COVID-19 pandemic. We must remember that due to the State of Emergency, many libraries saw their services reduced and they have not recovered (18). Second, some virtual libraries have been consolidated, and in many cases, have absorbed functions from hospital libraries. Third, the aim of the study was to understand the general activities of hospital libraries, including but not limited to instruction.

Much remains unknown about information instruction in Spanish hospital libraries. The aim of this work is to determine what education activities hospital libraries in Spain carry out, how they are integrated into the structures of their related hospitals and how they fit into the hospital structure for health profession education and research.

Methods

To carry out our work, we surveyed hospital libraries in Spain. The data collection process was as follows:

a) *creation of a questionnaire:* the survey was divided into three blocks: 1) questions about the library and number of personnel, 2) questions about education activities (audience, topics, format), and 3) questions about the integration of library instruction into the institutional structures (e.g., undergraduate curriculum, graduate medical education curriculum and research support). We used Qualtrics to create and implement the survey;

b) *sample selection:* to determine the current number of hospital libraries in Spain, we referred to the National Catalogue of the Health Sciences (*el Catálogo Nacional de Ciencias de la Salud)* (19), which was compared with the list of libraries from the Catalogue of Publications in Spanish Health Sciences Libraries (*Catálogo de Publicaciones en Bibliotecas de Ciencias de la Salud Españolas)* (20). We identified a total of 90 unique libraries;

c) *survey distribution:* in November 2022, we sent an email to all identified libraries with a link to the survey. Announcements were also sent to Health Sciences Libraries forums, and follow-up phone calls were made to library contacts to request participation;

d) *data analysis:* the data obtained was downloaded into Microsoft Excel for analysis. A descriptive analysis was completed in February 2023.

Results

About the libraries: a total of 77 libraries responded (85.5%). Four responses were excluded, 3 because the name of the library was missing, and one because it was not a hospital library. The total number of valid responses was 73 (81.1%). Among the 62 libraries providing education, the average number of personnel dedicated to teaching was 1.3 people. Given the importance of information literacy instruction, it is essential not only to have subject expertise, but also pedagogical training. Of the libraries offering education, 39 (62.9%) indicated their personnel have some kind of training in teaching methodology.

Educational activities: 62 libraries (84%) provide educational activities. 26 libraries (35.6%) indicated that other hospital departments also provide information instruction alongside the library. Of the 11 libraries not providing educational activities, 6 reported that another hospital department has taken over services the library previously provided.

User groups to whom libraries provide educational services: hospital personnel (*Table 1*), nearly all the libraries (95.1%) provide education for physicians and nurses. A third of the libraries serve other user groups, including many types of health professionals and researchers. Twelve libraries indicate they serve non-health professionals, although that is not the main patron group. Graduate medical students: out of the 62 libraries providing instruction, 61 (98%) serve residents. 49 libraries (67.1 %) indicated they are part of the resident education plan, and 3 were unsure. That is, 12 libraries provide education for residents without being part of the formal graduate medical education curriculum. Undergraduate medical students: University hospitals and network hospitals host medical students in their last years for clinical rotations and/or practicum. Medical student education is governed by undergraduate medical education requirements. 61 libraries (98%) provide educational sessions for this group. Out of these, 19 (30.6%) indicated that they are part of the formal undergraduate curriculum, and 11 (percent) were unsure.

User group	Number (n)	%
Physicians	59	95.1%
Nurses	59	95.1%
Others	21	33.9%
Other health professionals (*)	11	17.7%
Non-health professionals	12	19.4%
Researchers	6	9.6%

*Including: physical therapists, occupational therapists, technicians, dentists, speech language therapists, and other health personnel and those that entered "all personnel," "health personnel in general," etc.

Table 1. *Hospital personnel groups to whom libraries provide educational sessions.*

Instruction formats: 61 libraries (98%) provide in-person training, 39 (62.9%) deliver online training, and 38 (61.2%) publish user guides and other support resources.

Education topics: questions about instruction topics were structured in 6 sections (*Table 2*). The most common topic was databases, of which Medline was the highest. Sections 3-6 focused on research and scholarly publication. 22 of the libraries state they are part of the research education plan of their associated Health Research Institutes.

	Topic	n	%
Databases	Medline	58	93.5%
	CINAHL	33	53.2%
	Embase	30	48.3%
	Web of Science	8	12.9%
	Scopus	2	3.2%
	National Databases	7	11.2%
	Cochrane	5	8.1%
	Clinical guides	2	3.2%
Point-of-Care resources	(ClinicalKey/UpToDate/DynaMed)	16	25.8%
Support for scholarly publication	Citation styles and/or citation management tools	47	75.8%
	Quality of scientific journals and/or impact factor and quartiles	47	75.8%
	Journal publishing standards	29	46.7%
	Study types and/or critical appraisal	18	29.0%
	Researcher identity and profile and/or normalization of researcher signature	40	64.5%
Research impact and preservation	Repositories	12	19.3%
	Metrics	2	3.2%
Research dissemination	Research Data Management plans	2	3.2%
	Open Science and/or impact on publication	2	3.2%
Others	Plagiarism	1	1.6%

Table 2. *Topics covered in educational activities of hospital libraries.*

Institutional recognition: 83% of the responding libraries are part of the undergraduate medical education curriculum. 67% participate in graduate medical education. We believe a relationship with a continuing education accreditation agency is necessary, through which librarians can strengthen and guarantee adequate support for knowledge based information in an era of staff reduction (21). Only 22 libraries (35.5%) are part of their institutional research plan.

Discussion

The objective of this study was to determine the role that hospital libraries in Spain play in the scientific education of their users and institutions, and to determine their recognition by the bodies governing hospital education. We identified 90 active hospital libraries in Spain, 60 fewer than Sobrido-Prieto *et al*. did in 2021 (17). Even though there is not currently an official registry of hospital libraries in Spain, we believe that this supports anecdotal evidence of a decrease in the number of hospital libraries in recent years. The effects of the pandemic, consolidation of virtual libraries, and policies cutting back healthcare funding have taken their toll.

In the 2021 study, 48.6% (n=73) of libraries reported offering instruction (17). Our survey showed that in 2023, 84% (n=62) did. We believe that the difference between absolute and percentage data is not due to an increase in education activities offered, but by the decrease in libraries. It would be interesting to determine if provision of education is key to the visibility of the library and if libraries that provide education are more likely to survive. In 6 cases, education activities previously offered by the library have been absorbed by other hospital departments.

In any case, we have detected an increase of 35.6% in libraries offering educational activities, which we consider an improvement since it is a library activity strongly supported by international professional standards and frameworks (2, 3).

With respect to the new data provided in this study, we have the following observations:

Library personnel: within the responding libraries, the average number of librarians dedicated to teaching was 1.3. We believe that there are several issues that we didn't account for: the size of the hospital (and related number of users), and the percentage of workload dedicated to instruction. Out of these librarians, less than two-thirds (62%) indicated they have received any type of training in teaching methodology. We do not know if the libraries provide support for pedagogical training of their librarians, or if it is up to the individual to find time and funds to pursue professional development in these topics. We consider this a key issue, since we can only reach our users effectively with appropriate teaching strategies.

Instruction formats: sixty-one libraries (98.3%) stated that they carry out in-person instruction. In our opinion, this mode is crucial. It makes libraries visible to their users, and provides the opportunity to give feedback directly to students. Thirty-nine libraries (62.9%) indicated they provide online instruction. Online instruction is key for several reasons. Libraries often not only serve their hospitals, but also their health networks, covering a large geographical area. Online instruction can reach users not reached by in-person offerings due to scheduling conflicts, travel restrictions, and other factors. 38 (61.2%) libraries prepare on-demand user guides, video tutorials and other support resources, which are very useful for users when they have questions while they are looking for some type of specific information.

Education topics: database searching is the most common training topic. MEDLINE is the most commonly taught, followed by CINAHL and Embase, which reflects the main user groups of physicians and nurses. In addition, 26% of the libraries provide instruction on point-of-care resources (ClinicalKey, UpToDate, DynaMed). Given that these are some of the most widely used tools by clinicians, this seems like a low percentage. In Spain, while the Ministry of Health has a requirement for information training in undergraduate and graduate medical education, there is no central curriculum. For this reason, we believe that it would be valuable for a standard curriculum to be developed and institutionally endorsed.

Among research topics, the most common themes are citation management, researcher identity, and scientific journals (quality, impact factor, publication standards). Classes related to research dissemination are offered by a surprisingly low percent of libraries (3.2%), considering the impact this can have in a health professional's career. Since the goal of research is to establish facts, reach new conclusions, and make the results known, research dissemination is a key objective in the new ecosystem of open science and citizen science.

Institutional recognition: as noted above, the education provided by libraries to their user groups is not fully recognized by their hospitals and regulating bodies in Spain. Nor is there a common curriculum requirement for hospital library involvement in graduate medical education or research, which gives rise to great variability between libraries and among autonomous communities.

Despite the lack of institutional recognition and scarce human resources (librarians), many hospital libraries offer information instruction. It would be interesting, for future studies, to determine how hospitals with libraries compare to hospitals without libraries in quality and other measures (22).

Conclusions

The hospital library has a key role in the education of health sciences students and professionals in the field of scientific information. This is well-established by the MLA (2). Standard 5 of the *Standards for Hospital Libraries and Librarians, 2022* includes "education of hospital's clinical, nursing and medical staff" and "clinical education" as key functions of the hospital library (3).

Recommendations - we consider it essential that hospital libraries in Spain:

- include educational activities in their scope of work, as recognized internationally by health sciences libraries standards;
- get involved in the undergraduate, graduate and continuing education curricula of health professionals. This involvement should be integrated into hospital curriculum requirements and research commissions or committee regulations;
- require library staff who provide user education to receive training in pedagogy and teaching methodology to achieve optimal results ensuring that health professionals strengthen and improve their information skills.

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The research instrument "Instruction activities in hospital libraries" is available online as Supplementary Material.

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Letter from the President

Lotta Haglund

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Dear EAHIL Colleagues,

As this is the last year of my second and final term as EAHIL President, I've spent some time reflecting on my many years as an active member of EAHIL (and my 30+ years in health libraries). So much has changed in how we spend our days at work. While the essential work in medical libraries remains much the same, the tools have changed. Quite a revolutionary change is how we communicate, making it so much easier to contact colleagues and chat on Zoom or Teams or to collaborate over countries and even continents on projects or on writing an article for publication.

In 2027, EAHIL will celebrate its 40th anniversary. In many ways, EAHIL is run in the same way as in the early days. The EAHIL Statutes were last updated in 2008, and the Rules of Procedure were updated in 2016. To ensure that we have an association that can meet our objectives, I have initiated an open discussion at the next Board meeting about if and how we think the association need to develop. Depending on the outcome of this discussion, it will be on the agenda for the Council meeting and General Assembly in Riga.

Looking into the near future, we have an exciting 2024 ahead of us, with the event in Riga in June and the upcoming elections. During spring, we will elect the President and Board members, and in the autumn, we will elect Council members. We will need several new Board members for this election since 3-7 members could leave their posts. Four of them can be re-elected if they choose to stand for election. Information about the election process will be forthcoming, but start thinking about who you'd like to see on the Board for the next 2-4 years.

We still need to secure locations for the EAHIL events from 2026 onwards. Since our yearly events are our Association's main activities, and the planning timeline for an event is approximately two years, it's time to start considering submitting an expression of interest. It should be sent to EAHIL-SECR@LISTS.EAHIL.EU. Please refer to http://eahil.eu/events/arrange-conference/ for event guidelines, and feel free to contact other Board members or me for discussion and support. We are looking forward to hearing from you.

I hope to see many of you in Riga!

EAHIL President and Board elections 2024

Call for nominations

We seek nominations for the election of President (2025-2026) and Board members (2025-2028).

We will have vacancies for President, five executive Board member, and two co-opted Board members.

(EAHIL co-opts the two un-elected candidates with the highest number of votes as non-executive Board members for a two-year period.)

Nomination's process

Deadline for nominations: 20 April 2024.

Nomination form (Word):

https://eahil.eu/wp-content/uploads/2024/02/Board-election_2024_Nomination-form.pdf

Nomination forms should be submitted not later than 20 April 2024 23:59 Central European Time.

Completed forms should be sent by email to eahil-secr@lists.eahil.eu

EAHIL members working in Council of Europe countries are eligible to be nominees or nominators.

Nominators do not have to be from the same country as the nominee (unlike in Council elections)

Voting process

Voting will be open from 2 May to 20 May 2024.

The outcomes of the election will be announced at the General Assembly in Riga, Latvia in June 2024.

For the voting, all members will receive an email providing a link to the voting form linked to the member database.

What's involved with being President or a member of the Board?

The Board has developed a set of role descriptors to help with understanding the sorts of activities and time commitment – please see:

http://eahil.eu/wp-content/uploads/2020/03/EAHIL-Board-role-descriptors-20200309.pdf

Please feel free to contact any member of the current Board if you would like to have an informal chat about the work.

You may find current Board members at: http://eahil.eu/about-eahil/executive-board/

New President and Board members will receive support in taking up the roles. There will be an orientation and hand-over period, and we have an operation manual that we are regularly updating. So, please do not let lack of experience on the Board put you off!

If you have any problems, questions or find any errors please contact Maurella Della Seta or the EAHIL Board at eahil-secr@lists.eahil.eu

EAHIL depends on active members to keep the Association thriving and developing - please consider standing for election to help EAHIL thrive and develop!

Maurella Della Seta

EAHIL Past President

EAHIL

European Association for Health Information and Libraries

PRESIDENT AND BOARD ELECTION 2024
NOMINATION FORM

How to complete a nomination for President or Executive Board members:

1. Details of two nominators are required as well as the details of the nominee.
2. Nominators and nominee must discuss and agree on the nomination in advance.
3. Where options are marked with * please clearly mark what is applicable and/or delete other option
4. The form may be filled out online or in print. It does not require each person to add their signature, but each person should make sure their details are correct.
5. All three (the nominee and two nominators) must be copied into the submitting email in order for the nomination to be valid
6. The completed form must be received as an email attachment at eahil-secr@lists.eahil.eu not later than **20 April 2024.**

Candidate's agreement

I agree to be a candidate in the 2024 elections and am willing and able to serve on the Board of EAHIL from ***2025-2026 as President / *2025-2028 as an Executive Board member**

Name:.....

Job title: .....

Institutional:.....

City & Country: .....

Phone: .....

Email: .....

Date: .....

Nominator 1	Nominator 2
Name:	Name:
hereby nominate the candidate above	hereby nominate the candidate above
Institution:	Institution:
City & Country	City & Country
Phone	Phone
Fax	Fax
Email	Email
Date	Date

The completed form should be received via email at eahil-secr@lists.eahil.eu

THE 19TH
EAHIL
CONFERENCE

JUNE 11-14, 2024
RIGA, LATVIA

We are pleased to announce

the Registration for the EAHIL 2024 Conference is **now OPEN!**

The main theme

Small step and a giant leap: Re-orienting towards new environment

- Shaping the Educational Environment
- Research & Open Science
- Libraries as Change Agents
- Visibility & Strategic presence
- Technology & Tools

See you in Riga!

Stay updated at:
eahil2024.rsu.lv

RĪGA STRADIŅŠ UNIVERSITY

EAHIL Mentoring program

Tiina Heino (a), Aoife Lawton (b) and Fátima Gómez Sánchez (c)

(a) Helsinki University Library, Terkko Medical Campus Library, Helsinki, Finland

(b) Health Service Executive, Dr. Steevens' Library, Dr. Steevens' Hospital, Dublin, Ireland

(c) Library, IE University, Madrid, Spain

Following agreement of the EAHIL Board and discussion with the EAHIL Council in Trondheim, we were really delighted to introduce a mentoring program for all EAHIL members.

The areas of interest were:

- new members of EAHIL or new to the profession;
- leadership and management; job/role related challenges;
- help with resumes, cover letters, job interviews;
- specific skills in RDM/Open Science;
- specific skills in AI;
- specific skills in Library Spaces;
- specific skills in Systematic Reviews;
- Teaching IL and LIS students interested in Health Librarianship.

We had 27 registrations for mentors and 30 for mentees. Luckily, there were several registrations for both, so we could match the pairs so all registrants found a partner.

In the middle of November, the pairs were emailed with guidelines of the mentoring process

We are really excited to get feedback and really hoping that with this project EAHIL members can enjoy their work even more than before!

Update from the National Library of Medicine

Dianne Babski
Director, User Services and Collection Division
National Library of Medicine, National Institutes of Health,
US Department of Health and Human Services
dianne.babski@nih.gov

The National Library of Medicine (NLM), one of the 27 Institutes at the National Institutes of Health (NIH) serves as an engine for innovation and discovery as the world's largest biomedical library, and as a leader in research in computational health informatics. Our mission is to collect, preserve and disseminate trusted biomedical literature and health information to improve public health. We sponsor research, development, and training in data science, information science, biomedical informatics, and health sciences librarianship, all of which facilitate open science and drive innovation through a wide range of products, resources, and tools that we make available. Over the course of the last year (see Vol. 19, No. 1 (2023)) NLM has made concrete efforts to strengthen our leadership and staff capacity, to carefully and strategically plot a course towards a future that anticipates users' needs, and to continuously improve access and discovery to biomedical information.

Leadership announcements

Fig 1. *Monica M. Bertagnolli, M.D.*

The NIH is thrilled to welcome Monica M. Bertagnolli, M.D. as the 17th director. She is the first surgeon and the second woman to hold the position. NLM's leadership team has also had some exciting developments these past several months. NLM Director, Patricia Brennan R.N. PhD, retired from NLM and federal service on September 30, 2023. Stephen Sherry, Ph.D., who currently serves as Director of NLM's National Center for Biotechnology Information and NLM Associate Director for Scientific Data Resources, is serving as the Acting NLM Director while a national search is conducted for the next NLM Director.

Fig 2. *Stephen Sherry, Ph.D.*

Jerry Sheehan, previously serving as our Director for Policy and External Affairs, has accepted a prestigious position at the Organisation for Economic Co-operation and Development (OECD) in Paris, stepping into the role of Director for Science, Technology, and Innovation. To continue our mission with renewed vigor, the NLM has restructured his former position into two distinct roles to better address our mission. Subsequently, Mike Huerta has been appointed as the NLM Acting Deputy Director for Operations and Innovation, and Dina N. Paltoo, PhD assumed the critical role of NLM Acting Deputy Director of Policy and External Affairs. These changes underscore our commitment to innovation, operational excellence, and policy leadership. Finally, Richard H. Scheuermann, PhD

has been selected to be NLM's new Scientific Director to oversee NLM's Intramural Research Program, aiming to optimize resources and align with high-priority scientific objectives consistent with NLM and NIH strategies. This leadership change is anticipated to propel NLM's research portfolio and contribute significantly to the broader biomedical research community.

Library Operations is now the User Services and Collection Division!

On January 1, 2024, Library Operations (LO) became the User Services and Collection Division (USCD). This milestone marks the successful completion of the first goal of the USCD 2021-2036 Long Range Plan to Create a Modernized Organizational Structure. The reorganization fulfills our future vision to steward a unified collection, focus on meeting current and future information needs from a diverse customer base, respond in a nimble manner to technology advancements, and create operational efficiencies.

While we are changing the way we work, our commitment remains to collect, curate, and connect the world to scholarly biomedical literature, health information and data resources. USCD's updated organizational structure includes four functionally-aligned Branches. The Collection Branch selects, acquires, and preserves biomedical resources in all formats. The Health Data Standards Branch develops, maintains, and distributes health data standards and terminologies products and services. The Engagement Branch provides access to and fosters engagement with NLM collections, data, standards, and resources. And finally, The Discovery Branch describes, indexes, and curates the NLM collections and other trusted health information, data, and resources.

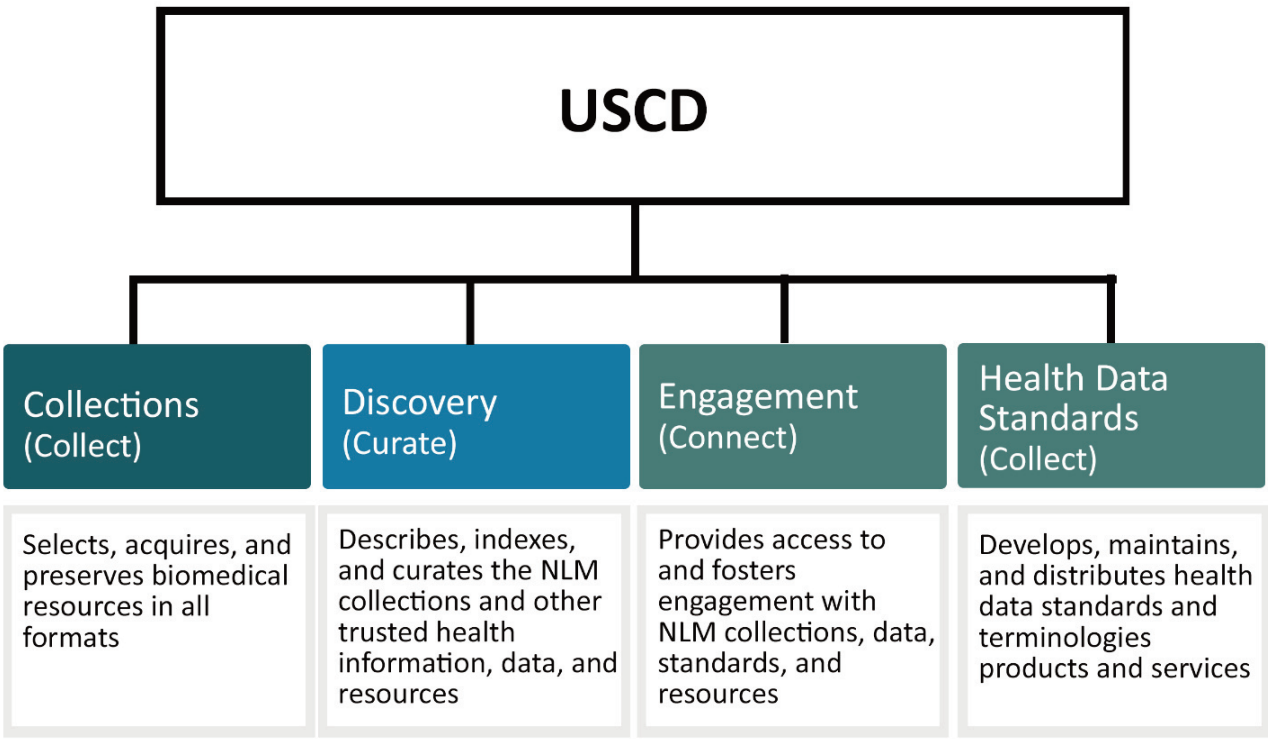

Fig 3. *USCD organizational structure and branch descriptions.*

Improving access and discovery

NLM remains focused on policy and technological advancements to increase findability, accessibility, and interoperability of its vast and growing collection for research discovery. To that end, we have some exciting product updates.

This year, NLM launched the Dataset Catalog to improve the discoverability and reuse of research data by helping users to search, find and connect biomedical datasets across multiple repositories through a single, user-friendly, "all-in-one" tool. NLM developed the DATaset Metadata Model, or DATMM, to provide information for describing data in datasets and repositories across the biomedical ecosystem. The Dataset Catalog serves as the interface to leverage DATMM in biomedical dataset discovery. During this beta phase, the public is invited to explore this tool for themselves, share with colleagues and submit feedback to NLM (via the vertical blue "Give Feedback" button along the right-hand side of the Dataset Catalog website).

Our CGR project, now in its fourth year, facilitates reliable comparative genomics analyses for all eukaryotic organisms in collaboration with the genomics community. It does this through an interoperable suite of National Center for Biotechnology Information (NCBI) repositories and knowledge bases offering high-value data, tools, and interfaces compatible with community-provided organism resources.

The ClinicalTrials.gov modernization project is in its fifth and final year. We will hit a half million records this year. Users have significantly shifted to the modernized ClinicalTrials.gov website in 2023, and the classic ClinicalTrials.gov will be retired this spring. This year, you can look forward to continuous updates and refinements, new results reporting components, and continued engagement, usability testing, and evaluation.

NLM continues to update and improve PubMed and PubMed Central (PMC). Proximity searching is now available in PubMed for the Affiliation field in addition to the Title and Title/Abstract fields. The "Sort by" drop-down menu used to change the sort order of PubMed search results has been moved out of the "Display options" button and now appears as a standalone feature at the top of the search results page, making it easier and faster to change the sort order of your search results. The GR field has also been renamed from "Grant Number" to "Grants and Funding" to increase the overall transparency of funding information in PubMed.

PMC has begun including Spanish language journals. PMC's Language Guidelines had previously required that the full-text content of a non-MEDLINE journal be published largely in English to be eligible to apply to the archive. This update is part of a larger goal to expand the diversity of content in PMC - and thereby PubMed - by being more inclusive of non-English language journals. PMC is also wrapping up phase 2 of the NIH Preprint Pilot. A project of NLM, the NIH Preprint Pilot was launched in 2020 to explore new approaches to increase the discoverability of NIH-supported research results, with the first phase focusing on NIH-supported research on COVID-19 and the SARS-CoV-2 virus. This second phase expanded the scope of the Pilot to integrate over 14,000 preprints into PubMed and PMC, enhancing accessibility to NIH-funded research.

NLM continues to innovate in data science and embrace Artificial Intelligence (AI) to drive impact for its users. An advanced machine learning algorithm called MTIX automates the indexing of Medical Subject Headings (MeSH) terms in MEDLINE citations, accelerating and scaling the indexing throughput amid a growing collection of biomedical literature in PubMed. NLM recently kicked off a 6-month Generative AI pilot focused on testing large language models for the benefit of internal process improvement, while also developing workforce skills and a supportive community of practice. Pilot participants from across NLM are building proof-of-concepts for 10 well-defined use cases in research and development, customer response, metadata transformation, grant analysis, and much more.

Our Network of the National Library of Medicine (NNLM) amplifies these efforts through its 8,000+ health science libraries and information centers extending into the public communities we serve. Check out our training and engagement programs that are free and accessible to users across the globe.

NIH Director Dr. Bertagnolli has set a vision that emphasizes inclusivity, patients as partners in scientific discovery, and a commitment to continuous innovation, saying "Our work is not finished when we deliver scientific discoveries, our work is finished when all people are living long and healthy lives." We remain committed to our core mission activities to collect, preserve, and disseminate quality biomedical literature and health information while we prioritize steps aligned to the vision of our NIH and NLM leadership in making NLM a data-science hub for expanded biomedical data, research, and data use. Thank you for being a part of our journey!

Publications and new products

Annarita Barbaro
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Dear all,

a few words on some of the stuff I've found on the web: following the not very encouraging results registered by the cOAlition S Report on the data provided by publishers participating to their Transformative Agreements strategy for the calendar year 2022, many have started to questioning the advantage of these agreements on the advancement of open access. I am reporting, among other news I've found on the web, an interesting initiative of the Swedish "Beyond transformative agreements" Working Group aimed to move away from transformative agreements. There are already other proposal to overcome these agreements, lets see what will happen next. Moreover, among my suggested readings section, I've included a blog post of Cabells titled "Unmasking a Predator: predatoryreports.org". I've found it really interesting as it is about a "predatory list" of "predatory journals" who tricked many people (also researchers at my institution) into relying completely into their black list. It is better to follow COPE suggestions and treat the lists of predatory (or fake) journals with the same degree of scrutiny as we do with the journals themselves.

JOURNAL ISSUES

Health Information and Libraries Journal: Contents of March 2024 (41:1)

Editorial

- **ChatGPT: Game-changer or wild card for systematic searching?**
  Anthea Sutton and Veronica Parisi

Review

- **ChatGPT in Medical libraries: An integrative review of possibilities and future directions**
  Mayank Yuvaraj, Brady D. Lund and Daud Khan

Original Articles

- **Content analysis of medical college library websites in Pakistan indicates necessary improvements.**
  Midrar Ullah
- **Using the pet health information behaviour intervention model should make information prescriptions for pet guardians more effective.**
  Niloofar Solhjoo
- **Focus groups revealed how community health workers in North Carolina find, verify, and process health information for migrant and seasonal farmworkers.**
  Catherine LePrevost, Leslie Cofie, Jamie Bloss & Joseph Lee

- **Text mining applications to support health library practice: A case study on marijuana legalization Twitter analytics.**
  Janice Y Kung, Kynan Ly and Ali Shiri
- **Retracted publications in autism research are mostly concerned with ethical misconduct.**
  Deborah H. Charbonneau and Leah R. Ketcheson
- **Methodological and users' surveys on the use of Latin American and Caribbean Literature in Health Sciences (LILACS) in Cochrane reviews identified required improvements to this resource.**
  Camila Micaela Escobar-Liquitay, Laura Vergara-Merino, Catalina Verdejo, Matías Kirmayr, Bastian Schuller-Martínez, Eva Madrid, Nicolás Meza, Javier Pérez-Bracchiglione and Juan Victor Ariel Franco
- **Internet and social media preferences of orthopaedic patients vary according to factors such as age and education levels.**
  Batuhan Gencer, Özgür Do an, Ahmet Çulcu, Nuri Korag Ülgen, Can Çamo lu, Mehmet Murat Arslan, Orhan Mert, Alperen Yi it, Teoman Bekir Yeni, Furkan Hanege, Elif Nur Gencer and Ali Biçimo lu

Regular Features

Dissertations into Practice

- **Making research and evaluation more useful and more interesting for information services and their users: a guide for students and practitioners.**
  Christine Urquhart

International Perspectives and Initiatives

- **Medical library systems and services: Bangladesh scenario.**
  Shafiur Rahman and M Al Mamun

Teaching and Learning in Action

- **Promoting evidence-based practice and nursing excellence: How involvement in a Magnet4Europe research study led to development of Critically Appraised Topics sessions for healthcare staff.**
  Claire O'Connor and Beverley Jones

FROM THE WEB

- **Open access: Need to move away from transformative agreements**
  In Sweden, the "Beyond transformative agreements" working group (convened by the Association of Swedish Higher Education Institutions) has proposed a strategy for how Sweden – and the Bibsam Consortium (the national body which negotiates licence agreements for electronic information resources on behalf of Swedish universities, university colleges, public agencies, and research institutes) - should operate in its negotiations with the publishers in order to move away from transformative agreements. The group's primary recommendation is that the Bibsam Consortium should refrain from entering read and publish agreements in hybrid journals. Instead, it should only sign agreements for publication in fully open access journals. The group also proposes complementary and supporting strategic initiatives and actions: signing agreements with publishers that only publish open access journals, providing an independent publishing platform like Open Research Europe (ORE), improving the opportunities for migrating researcher-owned journals from traditional publishers to other platforms, and continuing to work with

copyright issues related to open access. The full report and additional info are here: https://www.su.se/english/news/open-access-need-to-move-away-from-transformative-agreements-1.683787

- **COAR new report on the state of repositories in Europe**
  In the spring of 2023, OpenAIRE, LIBER, SPARC Europe, and COAR conducted a survey of the European repository landscape. This survey was made to provide essential data that will help shape a joint strategy to enhance and strengthen European repositories. The survey found that collectively, European repositories provide open access to tens or possibly hundreds of millions of valuable research outputs and represent a critical, not-for-profit infrastructure in the European open science landscape. The survey also identified three areas that could be strengthened in order to ensure the European repository network is able to support the evolving needs of the research community: maintaining up-to-date, highly functioning software platforms; applying consistent and comprehensive good practices in terms of metadata, preservation, and usage statistics; and gaining appropriate visibility in the scholarly ecosystem. The full report, Current State and Future Directions for Open Repositories in Europe, is available on Zenodo: 10.5281/zenodo.10255559

- **UNESCO. Open Science Outlook 1**
  UNESCO has published a report, Open Science Outlook 1. Status and trends around the world, to assess the state of open science at the global level in line with the 2021 UNESCO Recommendation on Open Science. This first edition of the global Open Science Outlook seeks to identify potential metrics or indicators and methodologies, both qualitative and quantitative, that can describe the status and progress of open science across the regions, actors and disciplines. It also highlights essential gaps in the available data and information, as well as the means to assess the impact of open science on the benefits of science for all. This publication also explores the challenges faced by myriad open science actors around the world in embracing open science, such as concerns related to intellectual property and the need for adequate infrastructure and funding. It highlights areas that require more attention and resources, aiding policy-makers, funders and other leaders in setting strategic priorities for advancing open science. The Report can be freely downloadable at:
  https://unesdoc.unesco.org/ark:/48223/pf0000387324.locale=enpf0000387324.locale=en

- **United2Act. Against paper mills**
  United2Act (https://united2act.org/) is a group of international stakeholders working collaboratively to address the collective challenge of paper mills in scholarly publishing. In 2022, COPE and STM undertook a study (read the Report here: https://publicationethics.org/resources/research/paper-mills-research) based on data from publishers and interviews with stakeholders, to understand the scale of the problem of paper mills, and to consider what actions to take. After the issuing of the Report, a virtual summit in May 2023 engaged research bodies, publishers, researchers, universities, and publishing infrastructure and resulted in a Consensus Statement outlining five key areas of action. The five areas are: education and awareness, improvement of post-publication corrections, more research on paper mills, the development of trust markers, and the facilitation of the dialogue between stakeholders about the systematic manipulation of the publication process. Each area has a dedicated working group assigned to it.

READING SUGGESTIONS

- Cabells. Unmasking a Predator: PredatoryReports.org [blog], The Source, January 16, 2024 https://blog.cabells.com/2024/01/16/unmasking-a-predator-predatoryreports-org/
- Koerber A. et al. The Predatory Paradox. Ethics, Politics, and Practices in Contemporary Scholarly Publishing https://www.openbookpublishers.com/books/10.11647/OBP.0364
- Linacre S. The Predator Effect: Understanding the Past, Present and Future of Deceptive Academic Journals https://www.fulcrum.org/concern/monographs/1j92gb03n

- Dufour, Q., Pontille, D., & Torny, D. (2023). Supporting diamond open access journals: Interest and feasibility of direct funding mechanisms. Nordic Journal of Library and Information Studies, 4(2), 35–55. https://doi.org/10.7146/njlis.v4i2.140344

SOME FORTHCOMING EVENTS

5th International Library Staff Week
13-17 May, Istanbul, Turkey
The main theme of the 5th International Library Staff Week is Digital, in every sense. This event brings together professional Library staff with varied backgrounds working in universities or other research orientated libraries with an interest in sharing ideas and networking with colleagues. For further information: https://libguides.ku.edu.tr/ilsw_2024

19th International Conference on Open Repositories
3-6 June, Göteborg, Sweden
The theme for the OR2024 conference is: Empowering Global Progress. OR2024 intends to provide an opportunity to explore and reflect on the ways repositories enable transparent and sustainable information and data. For more info: https://or2024.openrepositories.org/about/

European Association for Health Information and Libraries (EAHIL) 2024
11-14 June, Riga, Latvia
The conference theme, Small Step and a Giant Leap: Reorienting Towards a New Environment, encourages libraries to adapt and thrive amidst continual evolution, encompassing both incremental changes and significant advancements while building upon the inspiring ideas of the EAHIL 2023 theme. Here is the link to the conference website: https://eahil2024.rsu.lv/

2024 ALA Annual Conference & Exhibition
June 27 – July 2, San Diego US
2024 ALA Annual Conference & Exhibition
June 27 – July 2, San Diego US

LIBER 2024 Annual Conference
3-5 July, Limassol, Cyprus
LIBER's Annual Conference is one of the most important gatherings for research library professionals in Europe. The theme of the 2024 Conference is: State-of-the-art Libraries in the Service of Science and Society. More info at: https://liberconference.eu/

Please feel free to contact me (annarita.barbaro@iss.it) if you have any further suggestion about initiatives or events you would like to promote.

In memory of Elisabeth Husem, President of EAHIL 1994-1998 (12 October 1940 - 25 January 2024)

Elisabeth passed away on Thursday 25th January, at the age of 84 after suffering from Parkinson's disease. This is sad news for EAHIL and all medical librarians who knew her for a long time.

She was a lovely and warm person, always in a good mood, with a smile, always stylish and beautiful, active in work and social activities and engaged in so many things. She was able to communicate cordially with colleagues and friends, of whom she had many, both in Norway and abroad.

Elisabeth has been internationally oriented ever since she graduated from the École de Bibliothécaires et de Documentalistes in Paris, met her husband there, got a job in UNESCO and lived in Abidjan at the Ivory Coast for 8 years. After returning to Norway, she worked in the library at the University of Oslo until her retirement.

Elisabeth was elected President of EAHIL in 1994 and served two terms until 1998. As President, she was very keen to encourage to join more members from Central and Eastern Europe to EAHIL. She looked for ways and means to get them involved in EAHIL activities and to come to conferences.

Many Baltic librarians still remember our first informal Nordic-Baltic meeting in Elisabeth's apartment after the 4th EAHIL conference in Oslo in 1994, where she was the main organiser and where she was elected President of EAHIL. This is where the idea of the Nordic-Baltic partnership programme was born. Since then, she has been actively involved in the Nordic Library Association, Section of Medicine and Health (SMH) Baltic Committee until 2008.

This was a long-standing Transfer of Knowledge programme that lasted for more than 15 years, bringing together Baltic medical librarians from Denmark, Sweden, Finland, Estonia, Latvia and Lithuania. Later, librarians from Russian universities in the Baltic region were invited to join and Transfer of Knowledge continued up to 2009. Elisabeth was a central person in this collaboration project.

In 2005 Elisabeth was awarded the King's Medal of Merit in silver for her international accomplishments. Elisabeth retired in 2010, but even after retirement she attended EAHIL events.

Many thanks to Elisabeth for her work, time and energy spent on our profession and friendship. We will miss and not forget her.

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