An Examination of Health Information Professionals' Discourse Surrounding Knowledge Synthesis: A Content Analysis

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Abstract

Introduction: Knowledge Synthesis (KS) is an umbrella term that encompasses a family of research methods that aim to draw insights from existing bodies of research literature through established processes of review and analysis. Providing support services for KS is part of many health libraries' day-to-day business and has been for several years.

Methods: This article presents the results of a content analysis conducted to gain insight into our collective relationship with KS using journal articles and conference abstracts associated with the Canadian Health Libraries Association and the Medical Library Association. The study is framed in terms of three broad questions: What do health information professionals talk about when they discuss knowledge synthesis? How do they talk about it? And who is doing the talking? Descriptive codes and attribute codes were applied to the texts. Descriptive codes were grouped and regrouped to create sub-themes and overall themes in a bottom-up fashion.

Results: Three broad themes are evident in the texts: the *Case for KS Work*, *Everyday Realities of KS*, and *Pushing Back*. KS discourse in the venues examined is currently dominated by the voices of health information professionals working in academic libraries, though this was not always the case.

Commentary: I suggest that our collective relationship with KS work has been changing, and health information professionals are starting to become more comfortable with setting boundaries around KS work.I also suggest that an apparent shift in voice towards academic health information professionals and a general increase in the KS content included in these venues over time could be attributed to 1) the widespread adoption of evidence-based practice among our clientele, and 2) increased emphasis on research impact assessment.

Introduction

This article reports on an examination of texts (journal articles and conference abstracts) from the Canadian Health Libraries Association (CHLA) and the Medical Library Association (MLA) to explore the discourse surrounding knowledge synthesis among health information professionals. For the purposes of this study, "health information professionals" (HIPs) include various professional titles and roles such as librarians, information specialists, informationists, and library technicians. "Knowledge synthesis" (KS) is an umbrella term that encompasses a family of research methods that aim to draw insights from existing bodies of research literature through established processes of review and analysis. It is also sometimes referred to as research synthesis or evidence synthesis. Among HIPs, the best known examples of KS are arguably narrative reviews, systematic reviews, and scoping reviews, but the list of review types is extensive and keeps growing as new review types are proposed, developed, and catalogued[1]. Interest in KS and related library services for science and humanities disciplines has increased among information professionals relatively recently[2-5], but HIPs have been aware of KS in the health disciplines for decades and many HIPs' daily work is impacted by KS to some degree.

Many studies have examined library conference programs and journals to provide an overarching interpretation of their content. According to Myers, "Knowing what librarians

talk about [. . .] is important because what we talk about is what we are doing, and what we are doing is creating the future work environments, services, and relationships that will shape and define libraries"[6]. But these studies can also highlight the characteristics of authors, the research methods they employed, the breadth of topics addressed through specific venues, the treatment of a particular topic in specific venues, or themes that provide insight into the experience of a particular population[7-12]. Such studies help us to take a big-picture view of our profession and what is happening within it. Once we take a step back, we are prompted to consider the assumptions and beliefs that make up our mental models of day-to-day practice and our profession, and how those models compare to the picture that is presented.

The objective of this study was to gain insight into our collective relationship with KS by asking:

1. What do health information professionals talk about when they discuss knowledge synthesis?
2. How do they talk about it? and
3. Who is doing the talking?

This is a text-based study that examines publicly available journal articles and grey literature; as such, institutional research ethics board approval was not required.

Researcher Position and Background

I am a Canadian health librarian who, at the time of writing this manuscript, has been a practicing librarian for approximately 20 years and involved in KS work for approximately half that time. I identify most with a pragmatic/constructivist research paradigm[13,14]. Even though I currently work in an academic library context, I have previously worked in a hospital library and special health library environments. As part of the broad health library community, and the KS community specifically, I came to this project with an insider perspective, and I have made an effort to be conscious of my own biases throughout this study.

Methods

This study was guided by the methods for thematic coding and analysis described by Saldaña[15] and Braun and Clark[16]. Thematic analysis is an iterative process of theming the literature through a bottom-up manner of identification and refinement. It involves becoming familiar with the dataset; coding and recoding individual texts; identifying potential themes; and reviewing, revising, and naming the identified themes and sub themes. The constructivist paradigm is compatible with thematic analysis[16,17] because theming goes beyond merely labeling data, as researchers "reframe, reinterpret, and/or connect elements of the data" to construct meaning[17]. While a lengthy process, this method offers both structure and flexibility for exploring and interpreting the collected texts. As a truly exploratory study, no theoretical framework was used to steer the analysis in a particular way.

Study procedures were tested using articles gathered through handsearching Journal of the Canadian Health Libraries Association and coding the collected texts in NVIVO 14 software[18]. Emic coding–where the initial generation of descriptive codes is based on the

content of the texts rather than a predefined set of codes based on what the researcher expects to find[15]–was used for the test. Procedures were modified as needed, and the test sample was later re-coded as part of the larger dataset using the methods described below. Individual pieces of text were assigned multiple codes when appropriate. The unit of analysis in this study is the whole text; the frequency of a code within individual texts is not considered because of the substantial difference in word counts between conference abstracts and full articles.

Becoming familiar with the data through screening

Individual texts (i.e. articles and conference abstracts) were identified through handsearching i) tables of contents for the Journal of the Canadian Health Libraries Association (JCHLA) and the Journal of the Medical Library Association (JMLA), and ii) conference programs/lists of abstracts for CHLA and MLA annual conferences that are posted on the respective association websites. Handsearching started with material from 2023 and moved on to earlier years, stopping when either 2 full years of texts were published in that venue that did not meet inclusion criteria, or when all of the material available on the source websites was examined. CHLA is a national organisation that accepts conference submissions and journal articles in either English or French; conference abstracts available only in French were translated using the free Deepl online translator[19]. Titles and abstracts were read in their entirety; for potentially relevant articles, the full text of the article was read as well. Eligibility for inclusion in analysis was based on the following criteria:

Inclusion:

- The text is explicitly framed in terms of KS. This includes texts that discuss multiple topics, such as KS services in addition to other research support services. It also includes texts that mention how the topic the authors focus on relates to KS. For example, articles reporting on the development of a search filter that mention the potential usefulness of the filter for KS work would be included, while articles that report on the development of a search filter without mentioning KS would be excluded.
- Where author supplied keywords were available for conference texts, the appearance of relevant keywords made them eligible.
- Where specific research products were discussed, review types listed in Sutton et al.'s 2019 article "Meeting the review family: exploring review types and associated information retrieval requirements[20]" were considered to be KS.

Exclusion:

- Texts that are not framed in terms of KS.
- Texts that report on a KS project, rather than discuss KS as a topic.
- Texts that discuss how or where to locate published KS articles (for example, search filters for identifying systematic reviews).
- Conference texts without an abstract (i.e.: only a title and list of authors is supplied).
- Conference keynotes.

- Journal texts that fall into the following categories: book reviews, product reviews, messages from the journal editor, journal announcements, notices in memoriam.
- CHLA conference abstracts that were published in JCHLA.
  - The conference programs posted on the CHLA website[21] were considered the authoritative source for CHLA conference material. However published abstracts from the CHLA 2022 conference were used to supplement incomplete program information that year, after eligible texts were identified in the program.

The dataset does not include CHLA conference abstracts from 2020 or 2021. Sufficient program information was not available for 2021, and the 2020 CHLA conference was cancelled due to COVID-19 pandemic lockdowns.

Initial coding

Texts were reread and assigned two types of codes using NVIVO 14 software: descriptive codes that describe the texts' content[15], and attribute codes that capture texts' characteristics. A provisional descriptive code book with codes addressing the first research question "What do health information professionals talk about when they discuss knowledge synthesis?" was developed when testing study procedures, as described above; this codebook was used and adapted as needed to code the complete data set. Provisional codes were grouped and regrouped, folding related codes into broader codes. For example, the codes *bibliographic databases, software tools, search filters*, and *other tools* were collapsed into the single code *tools*. Coding was reviewed before moving on to the theming stage. The complete list of finalized codes for the first research question, their definitions, the number of texts where the codes were applied, and examples of passages where the codes were applied is available as a supplemental file (see data availability statement). A separate set of emic codes and annotations were used in NVIVO to note the occurrence of terms and observations relating to the second research question "How do they talk about it?" A list of the emic codes used is also available.

Attribute coding was used to gather information about the characteristics of the individual texts, as detailed in Table 1. The two codes that address the research question "Who is doing the talking?" were *Author workplace affiliations present* and *Geographic areas represented by author affiliations*. Data collection for authors' listed affiliations was based on the presence or absence of a given category rather than counts of affiliations for all authors of a work. More than one category was applied when the list of authors represented multiple affiliation types.

When the type of organisation listed was unclear from the text, I consulted the organisation's website to determine the affiliation category. Libraries serving organisations that primarily provide patient care were classified as hospital libraries. Libraries that serve organisations that primarily provide health education were classified as academic libraries. Affiliations to individual university departments, specific research units, or other traditional special library environments were classified as special libraries. Where job titles and affiliations listed in a text did not indicate the educational background of an individual – for example, "research associate" or "director" – the author was assumed to be a HIP because HIPs are the primary community associated with the communication venues examined. When the listed author titles or credentials indicated such status as students who are not also library staff, library

school faculty, non-library faculty (ex: nursing faculty), clinician, or software engineer, the author was designated a "non-library worker".

Geographic areas represented by author affiliations were broken into three categories: Canada, United States, and Another Country. There are no geographic restrictions on who may participate in the venues examined here, but since CHLA and MLA are national associations, Canada and the United States were considered separately from other countries.

Table 1. Attribute coding categories and associated codes

Category	**Codes**	**Data Entry Mechanism**
Text source	CHLA Conference, MLA Conference, CHLA-MLA joint conference, JCHLA or JMLA	Dropdown selection
Year	Year of publication or year the conference was held	Free text
Type of text	Research, Program/Case Description, Commentary, Other	Dropdown selection
Text format	Article, Oral Presentation, Poster Presentation, Lighting Talk	Dropdown selection
Number of authors	Number of authors listed	Free text
Author workplace affiliations present	Hospital library, Academic library, Special Library, Public OR School Library, Non-library worker author, Affiliation not included for 1 or more authors	Dropdown selection
Geographic areas represented by author affiliations	Canada, United States (USA), Another Country	Dropdown selection

Theming the Data

Codes, much like subject headings, are tags that note the presence of specific topics or ideas. Themes represent broader constructs. The process of theming is a sense-making exercise that involves sorting and resorting the final set of codes to explore the relationships between them. These relationships were interpreted and integrated into a set of broad themes that relate to the research question, "What do health information professionals talk about when they discuss knowledge synthesis?" Quantitative data collected through attribute coding and tallying codes and annotations related to research question two, "How do they talk about it?", as mentioned above, inform the overall themes as appropriate.

Limitations

The reader should consider three study limitations when reading the findings that follow.

Ambiguity in authors' writing

Some conference abstracts in the study would have been excluded if not for the inclusion of relevant author-supplied keywords (usually "systematic reviews"). These keywords indicate that the authors' own understanding of their work

frames it in terms of KS, despite not making that connection for the reader in their title or abstract. In years where conference abstracts were not accompanied by keywords, abstracts that fall into this category may have been excluded from this study. Likewise, the terminology that authors use can be unpredictable and different authors used the same terms in different ways. An example is the term literature review; many authors seemed to use the term to refer to narrative reviews, some authors clearly used it to refer to systematic reviews[22], and others indicated that they were using it as an umbrella term for all KS reviews[23]. The terminology HIPs use has also changed over time. This is beautifully illustrated by two conference abstracts that appear to describe the same service. Fang's 2006 abstract refers to "evidence based reports" that are produced using a process that sounds like KS procedures[24]. Later in 2013 Fang and colleagues did not detail the process used, but name the end product as "systematic reviews" instead of evidence based reports[25]. During handsearching, some relevant texts may have been excluded because the language used by individual authors did not obviously suggest that they were referring to KS, but since this project is not a systematic review, capturing all texts relating to KS is not essential.

Incomplete information in conference abstracts

The level of detail provided in conference abstracts varied from abstract to abstract, year to year, and conference to conference. Some information shared verbally during a presentation may not have been included in the associated abstract because of word count restrictions. Similarly, there were 27 conference texts included in the study that described partial study results in the abstract, and 76 that provided no results at all. Some authors indicated that results were not available at the time the abstract was submitted, some indicated that results would be discussed during the presentation, and in some cases results were omitted without explanation. As a result, coding may not have completely captured presentation content. In terms of author information, some texts did not list affiliations for all of the authors of a given abstract. The ways that author affiliations are presented in the texts could also have had an impact on attribute coding, since some authors may have multiple affiliations to choose from and the level of affiliation reported (for example affiliation with a specific university library vs. the university itself) could have varied between authors.

Quality of translation

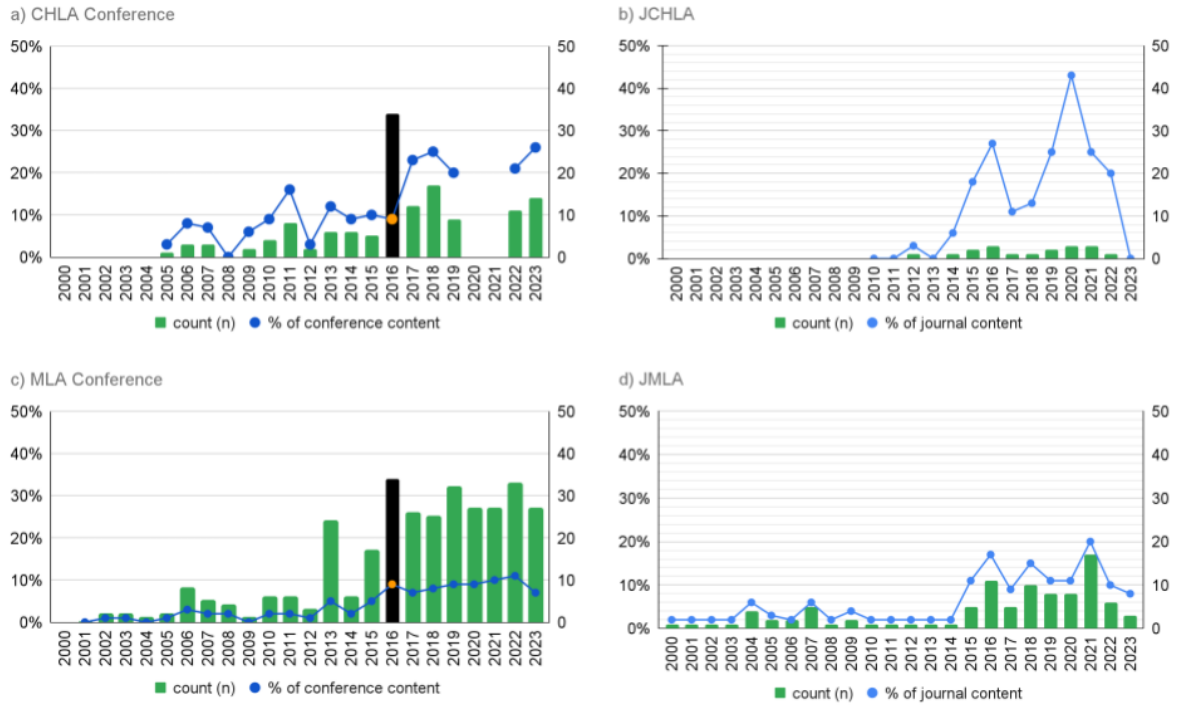
The quality of automated translation for French material is not as good as professional translation, but as an unfunded study it was not feasible to obtain professional translation for the French texts that were screened. There were some structural issues with translated texts but the message came across well enough for the purposes of this project, and working with an imperfect text was preferable to discounting French items simply because of language.

Findings

Sample Characteristics

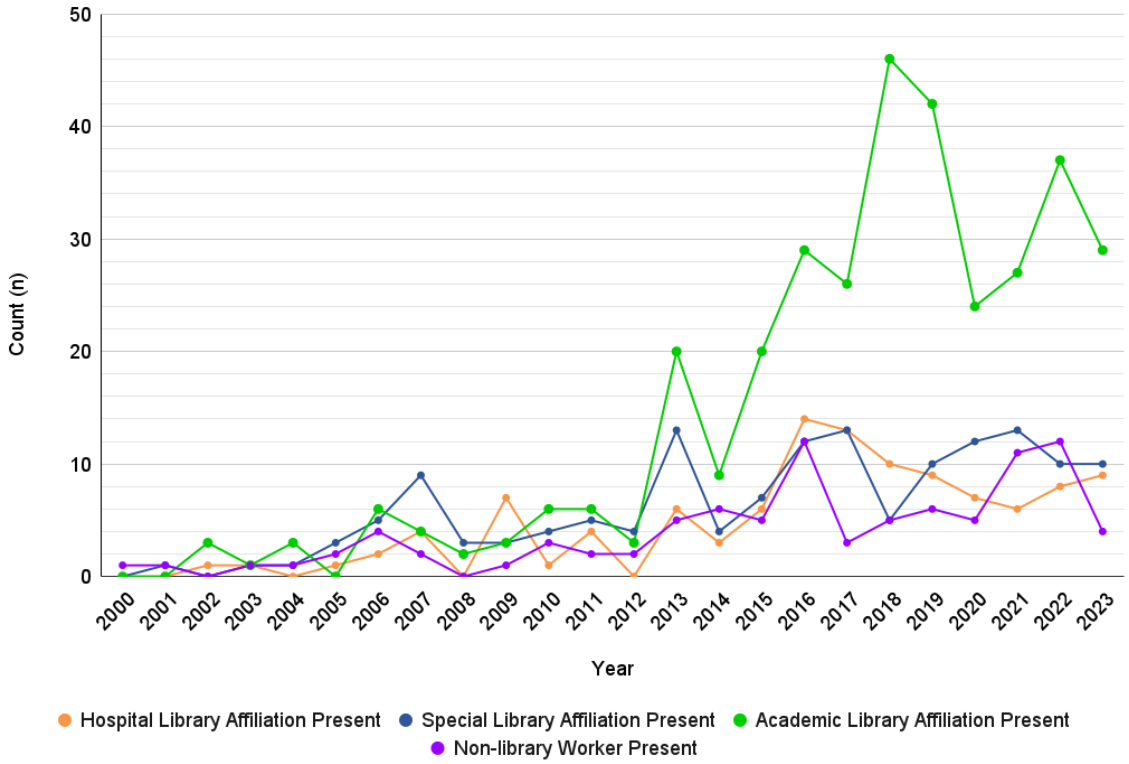
A total of 537 texts were included in the analysis. 274 (51%) were classified as "research", 203 (38%) were classified as "program descriptions", 21 (4%) were "commentary", and 39 (7%) were classified as "other". Most of the included texts (n=284, 53%) came from the MLA annual conference. When comparing the American and Canadian venues, both the MLA conference and JMLA were the source of more texts about KS than their CHLA counterparts, but the CHLA venues had more KS texts as a percentage of the overall number of texts in the individual conferences/journal issues than the MLA venues (see Figure 1 for the distribution of texts over time).

Figure 1. Sources of sample texts over time. Note that CHLA and MLA held a joint conference in 2016. The 2021 CHLA conference was excluded because of insufficient information in the posted program. The 2020 CHLA conference was cancelled due to the COVID-19 pandemic lockdowns.



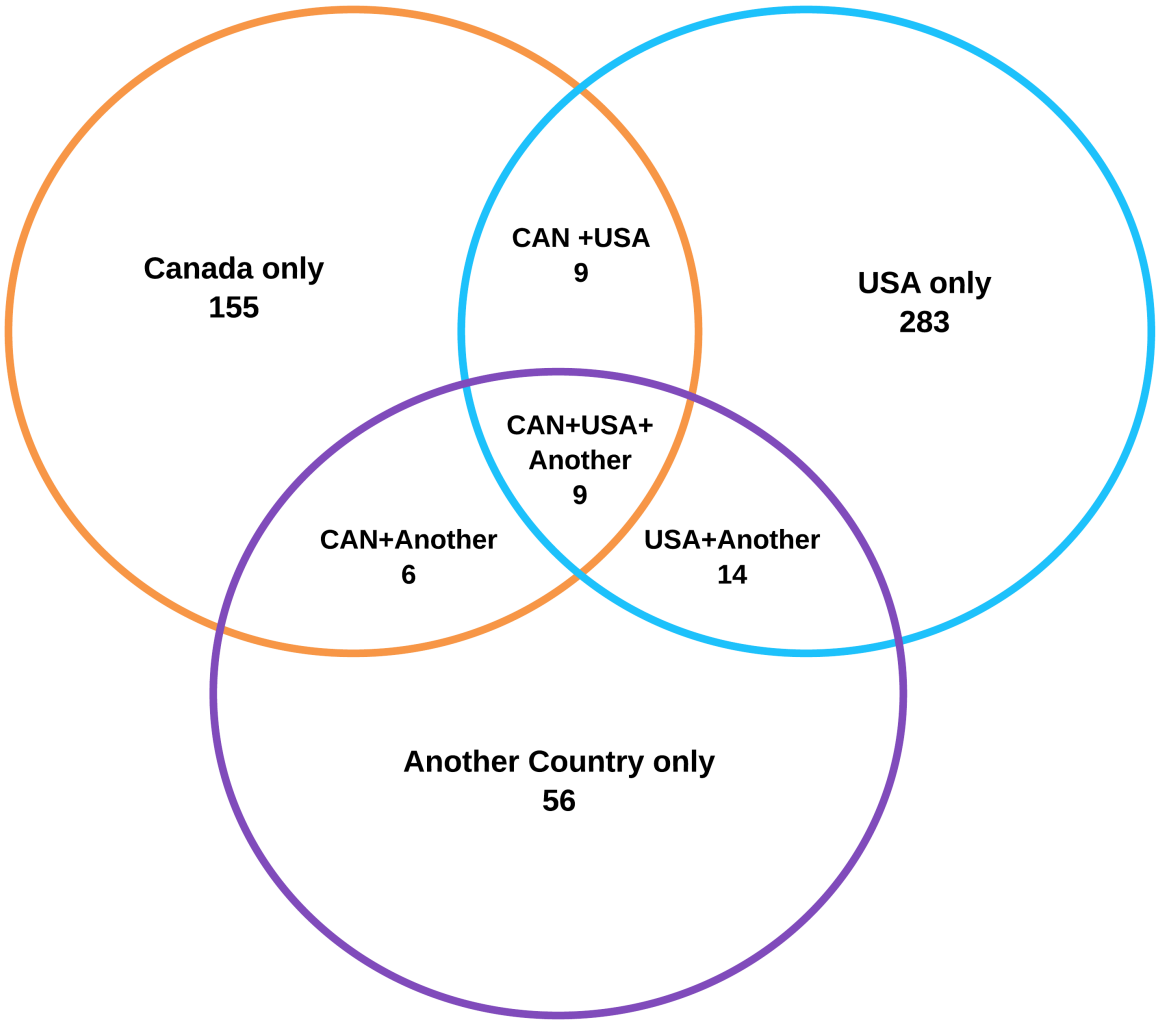
A mix of author affiliation types–hospital library, special library, academic library, and non-library workers–were present throughout the time period examined, but Figure 2 suggests that around 2013, or shortly after, the voice of academic librarians became most prominent in discussions of KS.

Figure 2. Counts of author affiliation types present in the sample by year.



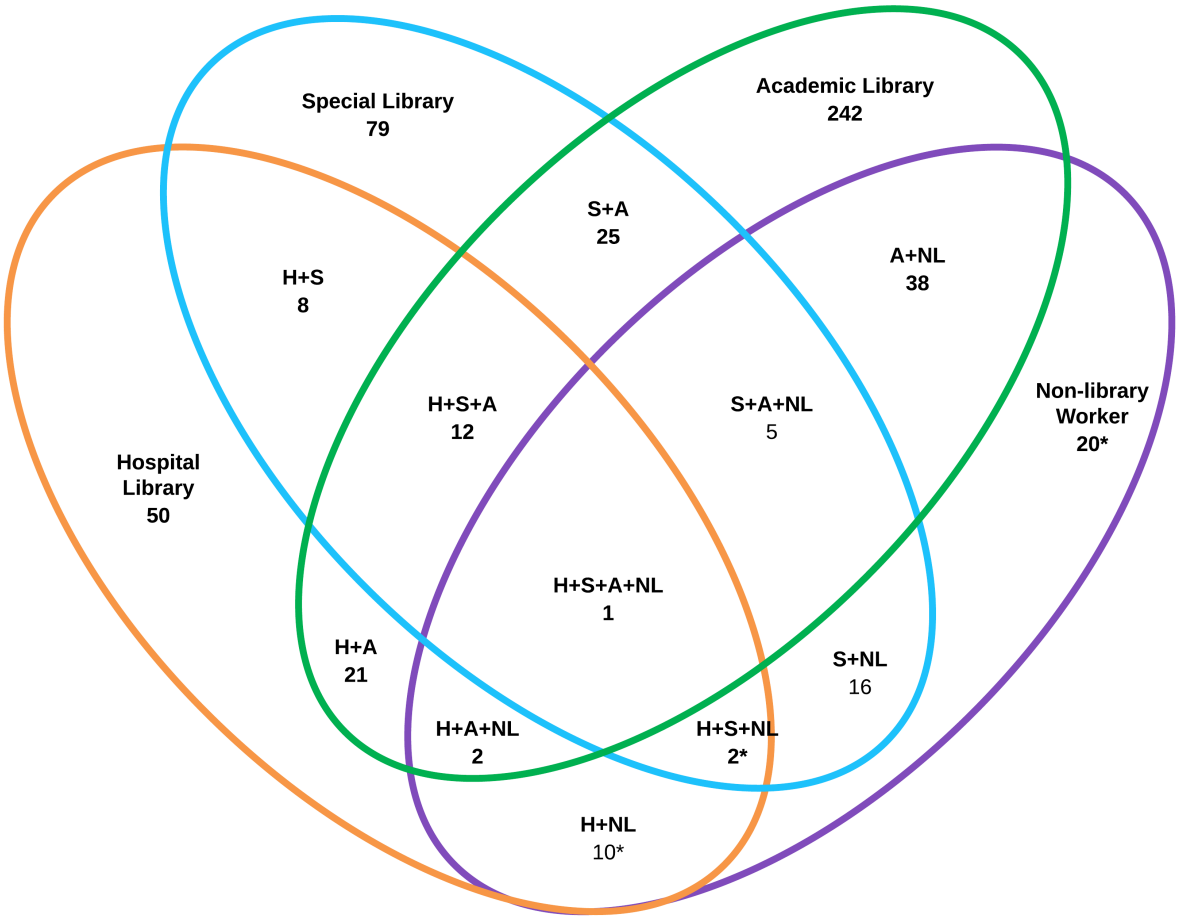
The Venn diagrams in Figures 3 and 4 show that in some cases authors from different affiliation types or countries worked together to produce texts, but for the most part authors from different affiliation types or different countries did not mix. The number of texts that only listed authors with academic library affiliations was more than double the number of texts where authors with academic library affiliations worked with other affiliations (242 compared to a combined 104 texts). In contrast, 50 texts only listed authors with a hospital library affiliation compared to 56 texts where authors with a hospital library affiliation worked with individuals with another affiliation, and 79 texts only listed authors with special library affiliations compared to 69 texts where authors with a special library affiliation worked with individuals with another type of affiliation.

Figure 3. Author geographic affiliation types present in sample texts. An additional five texts did not include geographic information for any authors (not represented here).



Two notable language-related features of the texts emerged during analysis: the terms used for KS (either generally or relating to specific forms of KS) and the use of language that implies a power relationship when discussing HIPs' KS work.

Figure 4. Author affiliation types present in the sample. Note: Due to the small number of texts with authors with school and public library affiliations, these texts have been folded into the categories based on the other author affiliation types present. These categories have been marked with an asterix (*). An additional six texts did not include affiliations for any authors (not represented here).

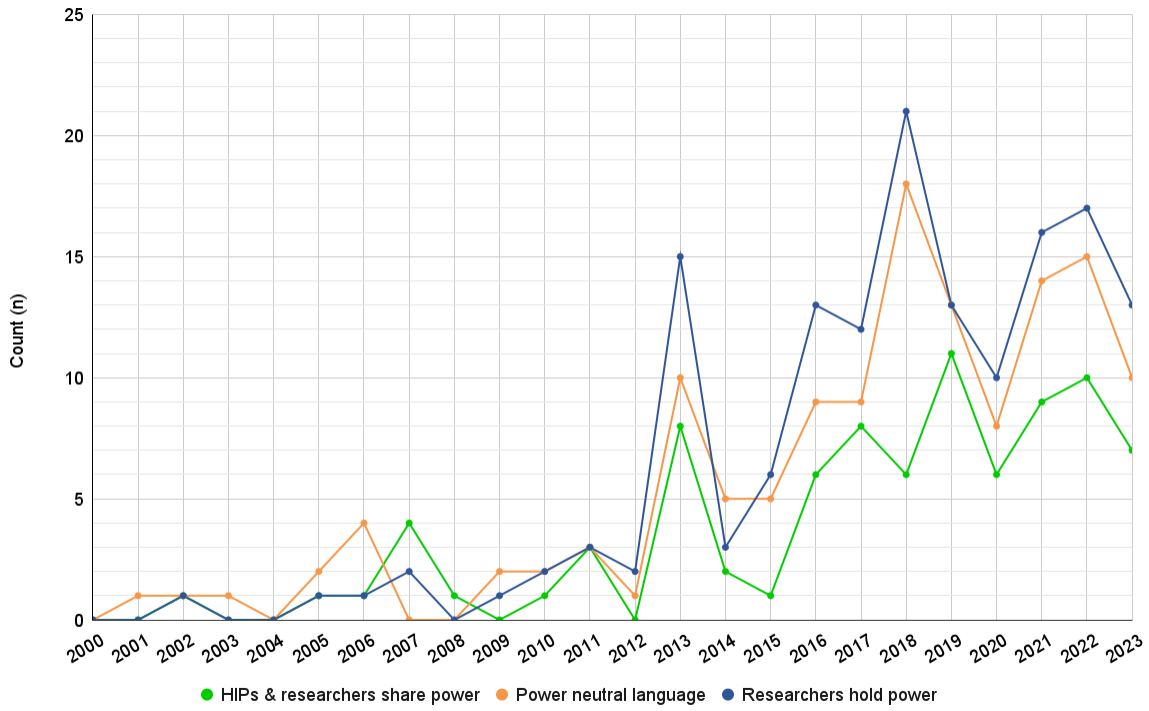


There were 102 terms used to refer to KS within the sample. 460 texts (86%) used the specific term "systematic review" (SR), and 17 texts (3%) used other terms that incorporated the word "systematic", such as "systematic literature review", "systematic overview", "systematic scoping review", and "systematic-like reviews". Ten texts made brief mention of other types of reviews but defaulted to focusing on SRs, compared to three texts that made brief mention of SRs but went on to focus on other types of reviews. SRs were also given prominence when KS was generally discussed, with phrasing like "evidence syntheses such as systematic reviews" (n=3 texts) and "systematic and other reviews" (n=34 texts). Three texts explicitly stated that the term "systematic review" was being used to refer to all varieties of KS. Other specific methodologies that were mentioned relatively frequently were "meta-analyses" (n=71 texts) and "scoping reviews" (n=71 texts), with an additional three terms (n=4 texts) that incorporated the word "scoping". In cases where authors referred to KS broadly, the two most common terms used were "evidence synthesis" (n=58 texts) and "knowledge synthesis" (n=42 texts). A strong link between KS and evidence is apparent in the KS nomenclature used in the texts, as there were 18 terms used for KS in addition to "evidence syntheses" that incorporated the word "evidence". Examples include "evidence based syntheses", "evidence based products" and "evidence based reviews."

The language that the authors used to describe their KS work can imply power relationships between HIPs and clients, whether used consciously or unconsciously. At least one instance of power-related language was observed in 238 (44%) of the texts. Three types of language were used in the sample: power-neutral language, language that places power with the client, and language that implies power is shared by HIPs and clients (see figure 5). Some authors used language that falls into different power categories interchangeably within the same text.

Vague but power-neutral language was often used to describe HIPs' KS work, such as "participating" in KS, "contributing" to KS, or being "involved" in KS. A similar number of texts used language that imply a secondary role for HIPs, where clients hold the power. Examples of this kind of language are: clients "using" HIPs or "including" HIPs in KS; references to "serving" clients outside of descriptions of formal library services, such as "Health sciences librarians now serve on systematic review teams"; and "supporting" clients that are undertaking KS projects, which was the most common language used in this category. Finally, language that implies that HIPs and clients share power included "partnering" or "collaborating" with clients, and referring to the HIP-Client relationship as collegial. As Figure 5 illustrates, all three categories of language were noted over time, with instances of power-neutral language and language that situates power with the client consistently occurring more often than instances of power-sharing language in texts from the latter half of the timeframe covered by the dataset.

Figure 5. Counts of texts with power-related language by year of publication.



Themes

Three broad themes and four subthemes were identified in the sample. Note that individual texts often contain content that is related to multiple codes and themes. Individual codes can also be inter-related across themes and subthemes. For example, the code "HIP workload"

affects and is affected by the code "library policies and processes for KS" and Theme 3, *Pushing Back*. Likewise, the code "burnout" is listed under *Matters that Concerns Individual HIPs*; the occurrence of burnout in a given context may or may not lead to elements of *Pushing Back*, like "scaling back KS service".

Theme 1: The Case for KS Work

The Case for KS Work is persistent throughout the dataset, starting with the first occurrence of associated codes in 2001 (see Figure 6 and Table 2). This theme relays several messages to the reader. According to this theme KS is an important part of both the overall research landscape and evidence-informed practice for health professionals, as the highest level of evidence in the evidence pyramid. The importance of KS, and demand for KS support from HIPs' clients, has been growing and only continues to grow. KS presents opportunities for HIPs to make a significant contribution to research, improve their credibility with clients, prove their worth to employers, and maybe even bring in extra funding to the library if researchers are charged for KS services.

Moreover, we are told that HIPs are important for KS work. Authors frequently link HIPs to better quality end products, citing recommendations to work with a librarian from recognized KS methods guidance and studies indicating that KS projects with HIP contributors are of better quality than those KS projects without a HIP. Language such as "important", "valuable", "significant", "key", "central", "crucial", "essential", "vital", and "pivotal" were used to describe HIPs' role and expertise. Some authors made more elaborate statements on the importance of HIPs to KS such as "The full scope of systematic reviews and related methodologies comprises a tapestry of interconnected skills through which librarians form the weft, being connected in various ways at different levels throughout the entire process, with new roles and tasks emerging for the profession to explore"[26]. This "full scope" refers to HIPs taking on a wide-ranging set of activities from screening to project management, as some authors see HIPs as a driving force for KS projects: "The involvement of an informationist can keep the project moving forward even when team members rotate off because of other duties"[27].

Finally, this theme tells us that HIPs have an obligation to take on various facets of KS work. This includes:

- Educating others: "In our role as information professionals, **it is our responsibility** to actively clarify the indications for and differences between systematic reviews, "systematic-like" reviews, comprehensive literature reviews, and patient-specific precision inquiries as we proactively engage in training our users and colleagues alike"[28]. (emphasis added)
- Improving the quality of research publications: "Librarians **should use their unique knowledge and experience to ensure** that reporting of search strategies in meta-analyses is improved"[29]. (emphasis added)
- Advancing KS methodologies: "Due to the developing nature of scoping reviews, we also suggest how librarians could **and should involve themselves** in this emerging area of the knowledge synthesis landscape"[30]. (emphasis added)

- And simply furthering HIPs' own best interests: "**To be successful, librarians must embrace this increased involvement** in supporting the production of higher levels of evidence"[31] (emphasis added).

Figure 6. Number of texts coded to themes over time

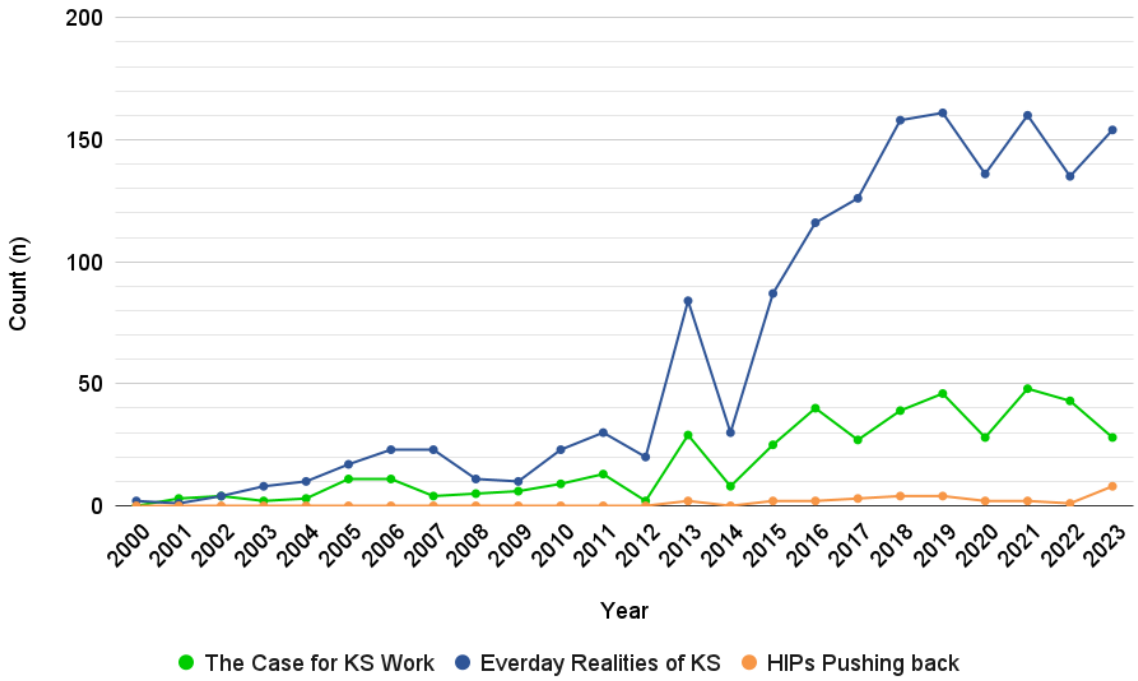


Table 2: Codes mapped to *Theme 1: The Case for KS Work*

Theme 1: The Case for KS Work	-HIPs are important for KS -HIPs are uniquely positioned -HIPs [could] do more than search -KS on the rise	-KS benefits HIPs -link between KS and EBP -link between KS and research funding

Theme 2: Everyday Realities of KS

Most of the descriptive codes used in this study fell into the theme *Everyday Realities of KS*, and this theme is persistent throughout the texts, starting in the year 2000 (see figure 6). Many of the codes directly relate to everyday practice, and they were discussed in a combination of positive, neutral, and negative ways. This theme tells us about the challenges of KS work, how HIPs attempt to mitigate these challenges, and their successes through four subthemes: *The World of KS, System-Level Matters, Matters of Daily Practice,* and *Matters Concerning Individual HIPs* (see Table 3: Codes mapped to *Theme 2: Everyday Realities of KS*).

Subtheme: The World of KS

The World of KS focuses on aspects of KS methods, KS products, and the researchers doing KS work. This sub-theme tells us that while KS research may have been the domain of elite researchers in 2005[32], that did not remain the case. In some instances HIPs have actively

worked with faculty to promote KS and increase the number of students undertaking KS projects[33]. Other times, KS has been embraced by students–or at least by their faculty mentors–without HIP intervention. In 2018, Wissinger noted that "In the last year, I have noticed a substantial increase in the number of graduate students who have been sent to me because their faculty advisor told them they need to do a systematic review. This was more of an oddity than a concern until undergraduate students started coming to me because they had received the same advice"[34]. In 2022 Foster, Sullton, and Crews reported that 50% of 225 respondents to their faculty survey indicated that they expect graduate students to be able to conduct KS reviews[35].

The quality of KS publications and adherence to methods and reporting guidance appears to be of great interest to HIPs, and this theme tells us that many researchers – including academic faculty, health practitioners, and students alike - do not truly understand what is required to do KS properly or have the skills to do it. Some clients opt not to work with HIPs.

Table 3: Codes mapped to *Theme 2: Everyday Realities of KS*

Theme 2: Everyday Realities of KS	**2.1 The World of KS**	-KS 101 -KS reporting -KS standards & guidelines -Quality of KS work/products	-Researcher resistance -Researchers are ill-equipped for KS -Researchers are not working with HIPs -Student KS projects
	2.2 System-Level Matters	-Decreased demand for KS service -External optics -Fee-based service -KS is not a priority -KS services -Library administration -Library policies & processes for KS	-No demand for KS support -Resource limitations -Service expansion/scalability -Standardisation -Sustainability of KS service -Teamwork in providing -KS service -Tiered services
	2.3 Matters of Daily Practice	-Communication with[in] the research team -Consumer health -Data management -HIP involvement in journal peer review -Journal editors/publishers -KS instruction for clients	-Languages other than English -Negotiating with clients -Predatory publications -Retractions/corrections for publications -Searching -Tools
	2.4 Matters Concerning Individual HIPs	-Ability to support KS -Feeling disrespected/undervalued -Getting credit for KS work -Interpersonal challenges -HIP agency	-HIP skill development -HIPs' return on investment -HIPs' workload -Restrictions on HIP scope of practice -Stress / burnout

Some push back against HIPs' guidance, as noted by Yang and colleagues: "The ISs [Information Specialists] stated that clients would push to take shortcuts that would sacrifice the quality of a systematic review and at times go against review standards"[36]. In other cases, HIPs give researchers what they need to successfully engage in KS, as Roth notes: "I have seen changes in the level of work performed by our graduate students, who have said that without this service, they would have never been able to do this type of research"[37].

Subtheme: System-Level Matters

The subtheme *System-Level Matters* includes matters that are larger than the individual HIP, though individuals may contribute to, or be affected by, them. Descriptions of formalized KS

services and library policies and procedures for KS work feature heavily in this theme, as authors share their attempts to scope KS work and organize services to manage the associated challenges. Two codes that stand out from the others in this subtheme are "external optics" and "library administration". The occurrence of "External optics" suggests that we are concerned about outsider views on HIPs, KS services, and the profile of HIPs and their libraries. The code "library administration" is somewhat related to external optics, as the texts in the dataset were often written by rank-and-file HIPs, rather than library leaders. Library administration may have different views than the HIPs doing KS work[38,39], and while they may not be directly involved in KS work, administrators' views and decisions affect KS services. HIPs want administrators to be on their side; in addition to generic calls for "support", HIPs see a role for administration in ensuring appropriate training[38,40,41], finding ways to work KS into existing roles without burning HIPs out[38,42,43], and giving HIPs permission to decline taking on KS projects when appropriate[44,45].

Subtheme: Matters of Daily Practice

Matters of Daily Practice are those that are most directly tied to the technical aspects of daily KS work. Frequently used codes in this theme are "searching", "tools", and "instruction for clients".

Subtheme: Matters Concerning Individual HIPs

This theme looks inwards, dealing with issues that impact individual HIPs involved in KS work, from practical matters like skill development to those related to job satisfaction and burnout. This subtheme tells us that those who undertake KS work can face significant challenges. The code "HIP Workload"–used for mentions of the volume of KS work, the amount of time it takes, references to work efficiency, or balancing KS work with other responsibilities–has been consistently present over the years. This code is distinct from, but ties to, the Theme 1 code "KS on the rise". For example, Saragossi's 2022 conference abstract "Bibliometric Analysis as a Method to Justify Library Personnel" speaks to the increasing volume of KS work overtime, and we can infer the impact of this increased output on HIP workloads:

> "There has been a consistent increase in the output of evidence syntheses at Stony Brook University over time. The number has doubled since 2014. Based on first quarter publications for 2022 it can be inferred that we will double last year's output. Additionally, from 2015-2021 the output has increased by 75% while library personnel has remained consistent at 5 full-time health sciences librarians[46]".

HIPs have also been discussing KS work in terms of return on investment, often characterizing a loss in terms of projects abandoned by the research team before completion, and the return as authorship or otherwise getting credit for their work in KS publications. Seeing KS work as an investment, and recent mentions of HIP personal agency–either in terms of HIPs' desire for agency, or HIPs possessing the ability to choose what KS work they undertake and having control over both how the work is completed and the products of their work–may signal a shift in how HIPs view their role in KS.

Theme 3: Pushing Back

The codes belonging to Theme 3: *Pushing Back* started appearing in 2013 and while the frequency of these codes is comparatively low, they are a stark contrast to Theme 1 (See figure 6 and table 4).

This theme suggests that HIPs' relationship to KS and KS researchers is changing. HIPs perceive themselves as–or want to be–"[. . .] coauthors and equal collaborators with faculty, not just as 'free labor' or at-will service professionals"[47]. Rather than struggle to meet KS demand, some HIPs are being "more discerning about whom [they] provide the service to"[48] or are otherwise scaling back on the services they offer. Some HIPs have started imposing conditions on service to manage demand, fund positions, facilitate better quality end products, ensure HIPs receive authorship on publications, and give HIPs a mechanism to walk away from projects that turn out to be methodologically poor. Examples of such conditions include: requiring completed protocols in advance; only working with teams that have a minimum number of team members; requiring researchers sign memoranda of understanding outlining terms of service; or charging fees for KS service. Sometimes the results of introducing these conditions are unexpected. For example, Lackey and colleagues found that demand for service went up, not down, after moving to a fee-based "core facility" system[49]. While authors discussed ways to deal with high levels of demand for KS service throughout the years examined, an explicit statement that HIPs' needs take priority only emerged in Deaver and colleagues' 2022 MLA conference abstract. They state, "Rather than focus on what systematic review service users want, we chose to first consider what the librarians running the service need"[50].

The occurrence of evocative, sometimes almost antagonistic, language used in the texts also suggests that an undercurrent of dissatisfaction with elements of the status quo may be building. The conference abstracts entitled "Sharpening the Other Side of the Dual Edged Systematic Review Sword: Expecting More From Our Users"[51], "Required, not suggested: Creating a rigorous protocol template for improved uptake and efficacy"[52], and Campbell and Dorgan's account of KS instruction at their library, below, suggest that not everything is okay:

> *These [classes] frequently fill up within a day or two of being posted, even though there is no formal advertising. This popularity is a double-edged sword. We know that offering the class has actually increased the demand for consultations, because participants inform us that they have made an appointment after having taken the class. One of our librarian colleagues described the courses as effectively "**painting targets on our backs**[53]" (emphasis added).*

Table 4: Codes mapped to *Theme 3: Pushing Back*

Theme 3: Pushing Back	-Conditions on service	-Scaling back KS service
	-HIPs not interested in KS	-There's more to research support than SRs
	-Putting HIP needs first	-There's more to searching than KS

Commentary

This exploratory study was guided by three broad questions: What do health information professionals talk about when they discuss knowledge synthesis? How do they talk about it?

And who is doing the talking? The data gathered through these individual questions are interconnected, and most useful when considered together.

Health information professionals communicate their practice-driven innovations and research so that the entire HIP community can learn and grow. Therefore, it is unsurprising that most of the codes identified in this study fell into the Theme *Everyday Realities of KS*. This is consistent with Spencer and Eldrege's scoping review on the roles HIPs play in KS[54]. However, a key difference between Spencer and Eldrege's results and those presented here is that their results are largely framed in an outwards-looking fashion, focusing on what HIPs do and their outputs. This study adds to the literature by looking inwards as well: noting matters that affect individual HIPs, asking whose voices are most prominent, and being mindful that these texts represent discussions that we have amongst ourselves, not with our clients. These additional elements that are less closely tied to everyday practice can prompt us to think more deeply about our collective relationship to KS. Perhaps the most thought-provoking things to come from the results presented here are 1) the prominence of *The Case for KS Work* and the tensions between that theme and *Pushing Back*, 2) the shift in author voice that took place around 2013, and 3) how the results of this study relate to our professional identity.

The Case for KS Work vs. Pushing Back

After being immersed in the texts, the most striking thing to emerge was the prominence of *The Case for KS Work*. It is reasonable to expect promotion of the HIP's role in earlier texts, such as McGowan and Sampson's 2005 article "Systematic reviews need systematic searchers"[32]. But twenty years later we are constantly reminding each other – even if it is only by a line or two in a background section - how important KS is to our clients and our everyday business, and how important HIPs are to KS. Surprisingly, at times we are also told that we have an obligation to take on this work. The audience for these texts is fellow HIPs, not health researchers or other actors in the research world who may not be aware of our expertise, so why is this theme so prevalent? Some HIPs expressed that they felt undervalued, prompting the code *feeling disrespected / undervalued*; Does stressing the importance of KS work and HIPs' role in KS stem from a widespread feeling of being underappreciated? Or is it something else?

Theme 1 brings to mind certain aspects of Ettarh's 2018 essay on vocational awe and librarianship; namely that our work is important and it must be done for the good of our clientele and society more broadly, even though it might contribute to job creep and burnout[55].The following quote from 2022 hints at an underlying mindset implied by theme 1:

> The aim of our research is to **inspire medical librarians to become guardians of their organization's systematic review output** either by offering peer review of researchers developed searches, or by offering librarian-mediated searches. That [way] each SR project should be based on a high quality search from the start of the project[56]. (emphasis added)

One way or another, some HIPs appear to have become the self-appointed guardians of KS integrity. This notion is reinforced by Hannake's commentary on the benefits of student KS projects. They point out that many HIPs have difficulty accepting KS as learning exercises, and feel obliged to talk students out of doing KS projects altogether[57]. KS methods are research methods like any other; would a HIP be determined to talk a student out of doing an

interview study or a survey? Perhaps the literature-based methods of KS make HIPs more invested in these works. But making ourselves responsible for the quality of all our clients' research output is irrational and self-defeating when HIPs do not have direct control over the work itself.

The benefits outlined by Theme 1 are appealing: HIPs get an improved reputation; we can build relationships with clients and add publications to our CVs while making a worthwhile contribution to research; and in some cases, fees for KS work can generate revenue for the library. But the potential challenges discussed in Theme 2, *Everyday Realities of KS* – such as workload issues, resource limitations, and problems working with researchers - have led to Theme 3 *Pushing Back*. With very few exceptions, the authors commenting on demand for KS service in the texts examined here indicate that the demand is significant. The addition of new roles and responsibilities with high client uptake cannot be sustained without adjusting existing workload and responsibilities. Demetres and colleagues showed that HIPs working in positions where KS is the focus of their job had significantly lower burnout scores than HIPs who had KS tacked on to other duties[43]. This may be due to a more balanced workload than that experienced by HIPs filling multiple roles. High volumes of work may also require a superficial, transactional relationship with clients where HIPS do not feel that their work is valued, rather than meaningful collaborations. We do know that dedicated KS positions can come with HIP-client relationships where HIPs share more equal status with researchers than they might otherwise enjoy[49]. A dedicated KS role could also signal that the work these HIPs are doing is highly valued by their institution. This could also impact job satisfaction. Since HIPs have expressed a desire to be regarded as equals and have agency over their KS work, it is worth asking whether it could be a misstep to formalize KS services in situations where dedicated KS positions are not a possibility. Some libraries have already moved to limiting the support they offer for KS, and others may wish to follow suit. A modest but noticeable jump in Theme 3 codes in 2023 may indicate that a shift in how HIPs view KS, and their role in it, is just beginning. Only time will tell if and how that shift plays out.

The Shift Towards the Academic Voice

Up until 2012, the number of hospital library affiliations, special library affiliations, and academic library affiliations within the texts was not dramatically different. In contrast, Myers' examination of MLA conferences from 2001-2019 found that 78% of total conference content was authored or co-authored by HIPs from academic libraries, and the amount authored or co-authored by HIPs from hospitals (19%) was roughly proportionate to the number of hospital librarians in the MLA membership at the time[6]. Since it is generally accepted that when it comes to conference participation and publication academic HIPs face fewer barriers, and more supports and incentives for participation, the relatively even representation among sectors from 2000 to 2012 suggests that most academic HIPs had not embraced KS to the same extent as special or hospital HIPs in the early 2000s. The year 2013seems to mark a shift in the author affiliation types represented in the collected texts, with academic voices starting to outnumber the voices of HIPs working in hospitals and special library environments. What could have prompted this shift? This study was not designed to uncover the underlying causes for what was observed. However, there are two potential factors whose influence in the years leading up to 2013 may have eventually led to an increase in both the number of texts framed in terms of KS in general, and academic HIPs' voices becoming more prominent.

1. Evidence Based Practice

The first thing to consider is that while evidence-based practice (EBP) is currently considered a foundation of Western health services and health education, it only started to gain momentum and be widely adopted in medicine and nursing in the 1990s and early 2000s[58,59]. EBP caught the attention of HIPs as well – likely in no small part because centering evidence in practice also elevates the importance of the source of that evidence, the library. Funk conducted an analysis of word usage in the *Bulletin of the Medical Library Association* and *Journal of the Medical Library Association* in 2013. Appendix B of their manuscript shows that use of the word "evidence" in the publications started to take off around 2000[60]. Today, academic HIPs are often involved in teaching aspects of EBP to health students. The hierarchy of evidence for clinical intervention questions places KS–specifically, systematic reviews, meta-analyses, and reviews of reviews–at the top of the evidence pyramid, as the "best" form of evidence to inform clinical decision making. With the increasing pervasiveness of the evidence hierarchy and EBP, it is easy to suppose that students and health practitioners might come to consider systematic reviews and meta-analyses the best form of research evidence, full stop. The texts examined here showed that, as a group, HIPs have a general tendency to talk about systematic reviews rather than use broad terms, like KS, or discuss other types of reviews. If we combine these two factors, we might begin to understand why some researchers do not understand the full range of KS options and want to do a systematic review for every type of research question, as has been noted by some HIPs.

2. Research Impact Metrics and Research Funding Decisions

We must also consider the potential influence of research metrics. The early 2000's was a busy time for those interested in research metrics, and bibliometrics specifically. The Academic Ranking of World Universities (now the Shanghai Ranking) first came out in 2003[61] followed by the Times Higher Education (THE) World University Rankings in 2004[62]. The H-index was proposed as a new way of measuring authors' scholarly impact in 2005[63], closely followed by several variant metrics[64]. The database Scopus launched in 2004, and underwent various enhancements over the following years: they released author identifiers in 2006; affiliation identifiers that "[allow] users to see a holistic view of an institution's research output" were released in 2007[65]; the journal performance metrics Source-Normalized Impact per Paper (SNIP) and SciMago Journal Rank were incorporated in 2010; and Scopus integrated with ORCID persistent identifiers in 2012[66]. 2012 was also the year that The San Francisco Declaration on Research Assessment–now simply the Declaration on Research Assessment, or DORA–came out as a response to the explosion of readily available research metrics. It featured "recommendations for improving the way in which the quality of research output is evaluated"[67]. Research metrics and performance-based research funding was even discussed in the BMJ in 2008[68].

Research metrics and institutional rankings can offer universities, and arguably research hospitals, prestige that attracts highly skilled personnel, students, funding[69] and philanthropic contributions. For individual researchers, demonstrating high levels of research impact demonstrates career success to those both inside and outside the organisation, which can open doors to the researcher. Demonstrating research impact is most directly connected to KS by the citation advantage enjoyed by published KS articles. Research published in 2003, 2004, and 2005 demonstrated that in the medical field, rigorous systematic reviews and

meta-analyses received significantly more citations than publications of other research designs[70-72]. If a researcher wanted to maximize the number of citations they receive to reap the benefits of increased notoriety and demonstrate effectiveness as a researcher in their grant applications, conducting KS projects would help boost their numbers.

What's more, in 2005 Patsopoulos and colleagues noted that

> *The superiority in citation impact of meta-analyses and secondarily RCTs is consistent with the prominent role given to these designs by evidence-based medicine,[1-4] despite the criticisms leveled against both designs.[15,20] The further dissemination of hierarchies of evidence may further increase the citations for meta-analyses and RCTs. If the proposal that each study should start and end when a meta-analysis is adopted,[21] meta-analyses may become even more highly cited[74].*

The latter part of this statement refers to a 2002 article in JAMA that criticized a general lack of published randomized trials that frame their results within the context of the evidence generated by other trials. At one point the authors of the JAMA article state "The public would be served better if systematic reviews were always available before new clinical studies began, which would reduce unwanted duplication of research and help ensure that new research had been designed to build on lessons from earlier research"[73]. This argument expands the relationship between KS and research funding from providing indications of researchers' success through bibliometrics, to demonstrating to funders that the study being considered for a grant is needed and its funding justified. If no KS work has been done on a specific research question, this may prompt some researchers to take on a KS project as a preliminary step before conducting primary research. Trainees who are mentored in such a way could in turn pass the practice on to those they later mentor, contributing to the ever-increasing volume of KS in general and student KS projects noted in the texts in this study. As researchers embraced KS, it was only a matter of time before academic HIPs began to publish and present on KS more frequently.

Our Collective Relationship with KS and Professional Identity

Hicks' 2014 work on librarians' professional identity found that the idea of service is fundamental to librarians' professional identity, but there can be a tension between service vs. professional expertise being the defining factor that makes librarians relevant. If language that is power-neutral or that situates power with the client are linked to the idea of service, and language where power is shared is connected to the idea that knowledge and skills are what define HIPs' professional identity, this could help explain both why individual texts included a mix of power-language categories and the relatively low use of language implying that power is shared. Hicks also notes "Not only was the service repertoire used to highlight how much clients needed the services librarians offered, but it was also used to highlight the perceived ignorance of clients regarding these invaluable and indispensable services"[74]. This statement can be linked to the occurrence of the codes *HIPs are important for KS* and *Researchers are not working with HIPs*. Finally, Hicks proposes that "recognition was particularly important as librarians needed it to maintain their sense of professional value"[74]. This ties to HIPs' expressed desire within the texts to be considered equals with clients, and mentions of receiving credit for their KS work.

Areas for Future Research

There are a variety of areas discussed here that could lend themselves to additional questions and further study. For example, do indications of *Pushing Back* continue in these communication venues–or others–over time? How do HIPs navigate the tension between wanting to contribute their expertise to KS and meet client demand for service, and the need to set boundaries around providing that service? How do service and expertise interact when it comes to HIPs professional identity? Is collaboration between HIPs from different types of organisations and geographic areas really as rare as the results suggest, and if so, what factors promote these collaborations? Readers may identify additional questions as well.

Conclusion

As an exploratory study, this work prompts the reader to reflect on their own relationship with KS, and the relationship between information professionals and KS more broadly. *The Case for KS Work* paints an attractive picture. Everyone wants to do meaningful work and if individual HIPs and their libraries can benefit in the process, through enhanced reputation or otherwise, all for the better. But as with anything else, KS work comes with challenges, and some HIPs may find that everyday KS work may not live up to their expectations or consider it worth the amount of effort involved. While individuals' personal experience with KS may vary, this study's findings suggest that our collective relationship with KS work has been gradually changing, and HIPs are starting to become more comfortable with setting boundaries around KS work for their own benefit.

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The following material is available under a CC BY-NC-SA 4.0 license, in the University of Manitoba Dataverse repository(75) at <https://doi.org/10.5683/SP3/TJUCSG>.

- Pdf file - Complete reference list of texts examined
- Excel file – cases with attribute coding

- Excel file – cross tabs, descriptive codes related to the research question "What do we talk about?"
- Pdf file - Code definitions

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