



Research Article

Empowering Postdoctoral Scholars: Insights From Library Focus Groups

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Abstract

Objective – The goal of this study was to assess how postdoctoral scholars (postdocs) engage with the campus library and identify barriers to access. Postdocs occupy a unique position within the research community, bridging the gap between graduate studies and permanent academic

positions. Despite their critical role, there has been little formal research to examine how postdocs interact with library resources and services, likely due in part to their relatively small numbers at academic and research institutions.

Methods – Three focus group interviews were conducted at two research intensive institutions in the United States. The qualitative analysis employed an iterative coding process to explore several themes: self-proclaimed needs to succeed during postdoctoral training; perceptions of library offerings, including space, services, and collections; and barriers to success.

Results – The thematic analysis revealed that postdocs value library resources and are seeking a range of services including financial services, mentorship, and scholarly writing support. There were only minor differences observed between the two institutions. The study identified lack of communication and time as the main barriers postdocs cited for not using the library. Based on participant feedback, we developed recommendations to enhance the postdoctoral experience with library resources and support their career development.

Conclusion – This study contributes valuable insights into optimizing library services for postdocs and highlights opportunities for libraries to better align their offerings with the unique needs and challenges faced by this sector of the academic community. Our approach also serves as a model to assess and improve library offerings to other small communities.

Introduction

After a researcher earns a PhD, they may do a postdoctoral fellowship to gain additional experience, refine their research skills, and build a publication portfolio. The postdoctoral rank (postdoc) typically lasts three to five years and serves as a bridge between doctoral studies and a fully independent research career, whether in academia, industry, or government (McAlpine, 2018; Woolston, 2018a). In fact, a survey of over 18,000 researchers revealed that the quality of mentoring received during postdoctoral training had a bigger impact on career success than mentoring received during graduate school (Liénard et al., 2018). Although technically classified as trainees, postdocs commonly mentor students and begin to apply for their own funding. Postdocs are central to the academic research pipeline given that the mentorship that the postdoc both gives and receives is positively associated with career trajectory of the mentee (Feldon et al., 2019; Liénard et al., 2018). However, because they are not students, faculty, or staff, postdocs exist in a somewhat liminal status (Figure 1). While postdocs gain valuable experience and mentorship, they must navigate a temporary position and balance the demands of research with the uncertainty of their future career path.

Partly due to their unique status, postdocs tend to fall through the cracks regarding access to resources, services, and community during a critical time in their careers (Nowell et al., 2018). In addition, postdocs are dependent on the funding provided by their mentor or principal investigator (PI), leading to an unbalanced power dynamic (Kahn & Ginther, 2017; Woolston, 2020). Both postdocs and their host institutions must actively address the challenges of the postdoctoral experience and develop effective support strategies. Shortcomings of postdoctoral programs have been well documented (Advisory Committee, 2023; Woolston, 2018b). Since the 1960s, researchers have published about “invisible” postdocs (Cantwell & Lee, 2010; Curtis, 1969; Gunapala, 2014; McAlpine, 2018; Travis, 1992). By

recognizing and addressing postdocs' needs, institutions can foster a more supportive and productive environment, ultimately enhancing the quality and impact of their future research.

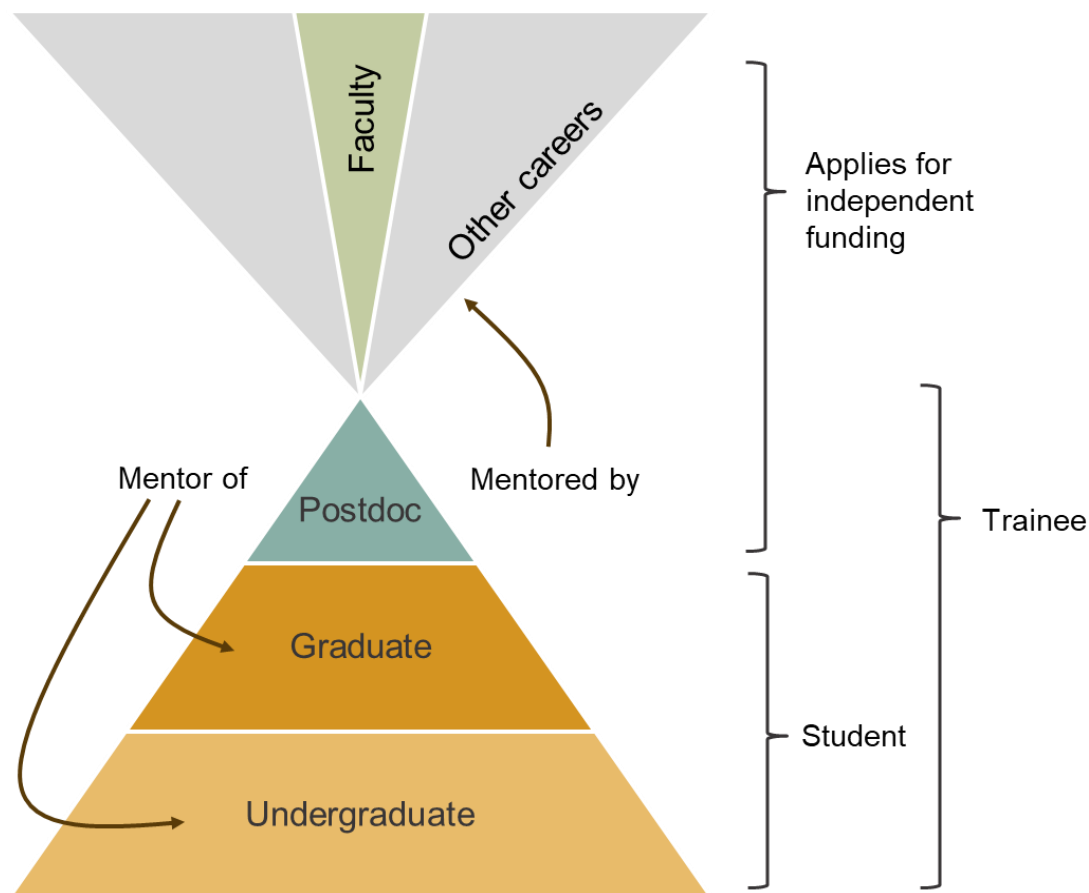


Figure 1
Postdocs are a linchpin in the traditional academic career path.

Literature Review

Few reviews have examined the library needs of postdoctoral scholars. A scoping review protocol highlighted the need for a literature synthesis, however, at this time no such synthesis exists (Nowell et al., 2018). Thus, our review of the literature was expanded to gather information on how libraries have investigated the needs of other early-career researchers such as graduate students. Several researchers highlighted the unique information seeking habits and needs of doctoral and postdoctoral trainees. A meta-review of doctoral students showed they exhibit different information behaviour than other types of graduate students (Catalano, 2013). Researchers (Ince et al., 2020) who interviewed doctoral students and postdocs to gain insights into how they conduct and disseminate research found that early career researcher workflows were fragmented due to a lack of training and lack of specialized tools to conduct these tasks.

Studies have shown that graduate program curricula may have gaps in research training, career development, and grantsmanship that could be filled by various campus units (Fong et al., 2016). Several researchers have called for libraries to address the unique needs of early career researchers. A survey of

postdoctoral positions within U.S. universities advocated for libraries to support these researchers (O'Grady & Beam, 2011). Interviews of international postdocs at one U.S. university identified gaps in library outreach and services. Gunapala (2014) called for librarians to partner with university professional development programs to offer writing and communication training for international postdocs. Scholarly communication support is also an emergent need. One mixed-methods study documented the need for research and scholarly communication skills guidance and training among doctoral students and their supervisors (White & King, 2020). A focus group on graduate students, but not postdocs, identified complex needs that require cross-campus efforts to address such as better communication and orientation to services, dedicated spaces to connect with peers, and opportunities to improve teaching skills (Rempel et al., 2011).

Libraries have examined different approaches for reaching the postdoc population. One researcher found that postdocs would benefit from promotion of library resources and services through both online and in-person orientations (Tomaszewski, 2012), while others concluded that access to asynchronous resources and virtual training was preferred (White & King, 2020). A successful outreach program for postdocs was developed to include maintaining a master list of current postdocs, providing library orientations, and meeting with postdocs in their research spaces (Barr-Walker, 2013). Gau et al. (2020) described a program created at the University of California, San Francisco Library where postdocs give one-hour recorded talks and receive guidance and feedback on their instruction by librarian mentors. This program used a needs assessment survey and provided resource guides tailored to postdocs. It also created a postdoc liaison librarian role to advocate for postdocs within the library and the broader research community at the university.

Objectives

Postdoctoral scholars stand to benefit from library services that supplement and build on the skills they developed during graduate school. Some studies assume that the needs of graduate trainees will be mirrored by postdocs, an assumption which is in part related to the challenge of defining and surveying the postdoc population. However, postdocs represent a distinct population with complex needs (Ott et al., 2021). The quality improvement project detailed in this paper directly evaluates how postdoctoral scholars currently interact with the library and their preferences for future access to library services. The study is designed to uncover the barriers faced by postdoctoral researchers to access library services with the goal of improving instruction and outreach to this unique demographic. In this project, we aimed to investigate:

1. What do postdocs need, and how can the library support those needs?
2. What is the postdocs' current view and use of library services?
3. What are the main barriers to postdocs' success and how can the library help ameliorate them?

Methods

This study was submitted to the institutional review boards at Northwell Health and the University of Alabama at Birmingham (UAB). Both review boards categorized this study as not requiring IRB review. UAB is a public university with an enrollment of 21,106 with an R1 Carnegie classification (University of Alabama at Birmingham, 2023). The number of postdocs at UAB fluctuates between 200–300 with the majority concentrated in biomedical departments. Northwell is a large hospital system with 85,000 employees distributed throughout the region. The Institutes for Medical Research are Northwell's

medical research arm with approximately 5,000 employees (Northwell Health, 2025). The vast majority of postdocs in the Northwell system work in Institutes labs, and there are around 50 at any one time. Postdocs at both institutions are centered in health sciences research.

The target interview population was current postdoctoral researchers. Eligibility criteria included age 19 or older and currently employed by UAB or Northwell with a job title of “Postdoctoral Fellow” or “Postdoctoral Scholar.” Instead of conducting a survey, which tends to yield low response rates, the focus group methodology was chosen because the population of postdocs is relatively small at both institutions (approximately 230 at UAB and 50 at Northwell) and focus groups are better suited to capture the diversity of experience among small populations (Morgan, 1997). Focus groups have a decades-long history of use in the areas of program evaluation and library science. As part of our literature review, we read a study by Rempel et al. (2011) that utilized focus groups to review library services to graduate students at Oregon State University, but we were unable to locate any that used focus groups to study the postdoc population.

In the two months prior to holding focus groups, we sent recruitment invitations to relevant academic units, which at UAB included the postdoc office, and at Northwell included the heads of research institute divisions and educational programs. We also utilized access to our campus directories to identify people with the job titles “Postdoctoral Researcher” or “Postdoctoral Scholar” and email them directly. At UAB, we utilized digital library signage, and at Northwell we hung physical flyers near postdoc workspaces. Participants registered for the focus groups using the built in Teams or Zoom form feature. We asked the following demographic and informational questions on sign up:

1. Full name
2. Email
3. Department/Program
4. How often do you use the [institution] libraries? (Answers: Often, occasionally, never)
5. Briefly, what is your area of study?

Three semi-structured focus group sessions were run – two at UAB with five and six participants each, and one at Northwell with eight participants. One researcher was the moderator for the focus group, while the others observed and contributed follow up questions. We prepared our questions using a backward design, starting with our objectives as outlined above and then coming up with questions that would allow us to find out that information. The number of questions we could ask was restricted by the amount we could cover in a one-hour focus group session. We did not pretest the questions given the quality improvement nature of the project. The prepared questions are available in Appendix A.

The focus groups were conducted and recorded over Zoom or Teams, depending on which platform was in common use at each institution. All participants gave written informed consent when they signed up for the session and were read a consent statement at the beginning of the focus group session. Participants had the option to answer the questions aloud or through the chat, and the moderator asked follow up questions as needed. Automatically generated transcripts and chat logs were captured. The researchers prepared a clean version of the transcript by comparing the automatically generated transcript to the audio recording.

After collecting the data, we used an iterative coding process (Katz-Buonincontro, 2022) and continued adding themes throughout the coding stage as they became apparent through close reading of the

transcript. We created a codebook with definitions for each theme (Appendix B). The clean transcripts and chat logs were coded independently by at least two investigators using the open source Taguette software (version 1.4.1-50-geed050b). Differences in tagging were resolved by discussion between the two coders with input from the third investigator as necessary.

This was followed by a thematic analysis for common themes, divergences from themes, and linkages between themes (Ritchie et al., 2013). Together, we analyzed the codes to come up with conclusions and concrete recommendations. These recommendations naturally fell into two categories: recommendations for the library and librarians, and recommendations for the institution as a whole.

Results

The focus groups garnered 26 registrations, with 19 actual attendees. Of the participants, 11 were from UAB, and 8 were from Northwell. All attendees hailed from STEM fields with 14 from medicine, 4 from engineering, and 1 from dentistry. The attendee distribution reflected the dominant science focus in the eligible pool of postdocs, and national norms (97% of all federally funded postdocs are in science or engineering fields (National Science Foundation, 2021)). The focus group members reported different levels of library usage based on their responses to the question, “How often do you use the library?” which was asked during the focus group registration. The majority, 10, responded that they occasionally use the library, 4 reported never using the library, and 5 stated they use the library often.

Several themes emerged from the analysis of the focus group responses. These themes were organized into three major categories:

1. Self-proclaimed needs to succeed in their program.
2. Perceptions of library offerings such as spaces, services, and collections/resources.
3. Self-identified barriers postdocs face.

Postdoc Self-Proclaimed Needs

Career Development Opportunities

Many postdocs expressed a need for career development opportunities, with two distinct areas of focus. First, postdocs wanted more instruction on navigating the job market, writing job application materials, and networking with their peers. As one postdoc described the problem: “It’s hard to get a clear picture on what our next step is going to be.” Second, they wanted to learn skills that they could add to their resumes to help them stand out in a crowded field. For example, they wanted to learn about cutting edge software packages, responsible use of AI, and lab management skills.

Funding

The postdoc period is often when researchers transition from working on projects funded by their mentor, toward writing to secure their own funding for research. In addition to career development, postdocs also wanted training on how to find funding opportunities and on grantsmanship to develop a competitive proposal. Funding (or lack thereof) for specific research activities was also discussed in relation to the publishing and software access themes below.

Publishing and Scholarly Writing Assistance

The focus group participants expressed a desire for more support related to improving scientific writing. They voiced a need for support when preparing a manuscript, such as pre-submission peer review to strengthen the article's message, as well as language and style review. Some of the attendees who self-identified as international trainees mentioned that this support was especially critical for postdocs who are new to U.S. publishing norms and may experience language barriers. As one international postdoc put it: "Especially for international postdocs, grammar reviewers will be key before submission." Another international postdoc agreed about the necessity of using pre-submission reviewers: "I had grammar mistakes and stuff like that that I completely missed." There were also expressions of concern for how to responsibly adopt emerging technologies such as generative AI in scholarly writing, and many postdocs hoped to learn more about this topic in the future.

The Northwell library, in particular, advertises a service where librarians help match manuscripts to possible journals. However, participants were split on the usefulness of this service to the postdoc populations—many felt sufficiently familiar with the journals in their field to decide where to apply themselves or relied on their PI to suggest an appropriate publishing outlet.

Software Access

Researchers require access to a number of software products such as reference managers, data analysis tools, and electronic lab notebooks. At both UAB and Northwell, some software packages, or training to use software packages, are provided by the library. The postdocs said they rely on products that are provided by the institution due to funding constraints and benefit from having access to specialized software, such as GraphPad Prism (RRID:SCR_002798) for data analysis and Biorender (RRID:SCR_018361) for scientific illustration. As one postdoc said: "Software support is huge for our lab. At the moment we are very dependent on GraphPad and Endnote from the library."

Mentorship

Postdocs need both mentoring and opportunities to mentor others (See Figure 1). The mentorship needs of each postdoc are unique, and ideally the relationship is tailored to the postdoc's career goals. The focus group members expressed challenges finding informal mentoring relationships outside of their lab groups. They also expressed an interest in learning how to become better mentors themselves as part of their professional development. One postdoc typified this experience succinctly: "I'm trying to gain experiences from different mentors. However, I would like to get specific training on how to become a mentor."

*Postdoc Perceptions of Library Offerings**Libraries as Physical Spaces*

A majority of the postdocs we interviewed did not use the physical library space, especially at Northwell, where the library has shifted to a majority-online presence, especially post-COVID-19. However, there were several responses that expressed a desire for an in-person library space, whether for quiet study, events, or socializing with colleagues. One postdoc exemplified this longing: "I really would [like] to be [at the library] and study and build social connections with the other researchers." Moreover, across both institutions postdocs expressed a strong preference for in-person events as opposed to virtual.

Library Collections

There was an uneven understanding about what library collections offer and mixed awareness of what the library provided aside from books. For example, several postdocs did not understand that the ability to access a paywalled article from Google Scholar while on campus was due to library subscriptions and access services facilitation. This lack of understanding can be interpreted positively in that users are seamlessly accessing resources; however, postdoc users do not attribute their ease of access to library effort. There was more universal acknowledgement and appreciation for interlibrary loan services. A postdoc expressed their appreciation for interlibrary loan this way: "I often request old papers not available and get a scanned copy, which is a great service."

Library Services

We asked the focus group attendees to rank three library services in order of importance to them and explain their reasoning: (a) assistance with a literature search, (b) help selecting a journal for a manuscript, or (c) providing access and support for software. The most common reason given for not using a particular library service was a lack of awareness that the service existed or that it catered to postdocs. In a few cases, there was a sentiment of not needing the service because they had the necessary expertise to perform the activity without assistance. For example, the least popular option was journal selection, as the interviewees felt most confident in this area compared to the other two services. The two remaining options, literature search assistance and software support, were equally popular. Those who ranked literature search assistance highest cited the need for help procuring resources and an appreciation for interlibrary loan. For example, a postdoc stated: "Yes, we have recently reached out to [librarian] for help with a literature search as we prepare to write a lit review." Focus group participants that ranked literature search highest tended to associate software support with IT, not the library. Those who ranked software support highest did so for financial reasons. Postdoc budgets are limited, and they were grateful for the opportunity to access software they would not otherwise have been able to purchase.

Library Visibility and Outreach

Postdoc usage and perception of library services was heavily linked to the library's visibility and its outreach and communication efforts. A gap in marketing was clearly evident. Even postdocs who knew and regularly used library resources were unaware of the breadth of services available. In fact, when asked, "What is the one thing you would change about the library?", one postdoc summed it up with: "I would say improve visibility so we can take advantage of your services." Another told us: "the most important thing to do is to improve communication. Most postdocs don't know that these services are available."

Self-Identified Barriers for Postdocs Use of the Library

Communication

Postdocs had inconsistent knowledge of what was offered by the library and were frustrated by a lack of a centralized list of services relevant to them. As one postdoc put it: "I'm very new to [the institution], joined about a month ago, so I don't know where to find most resources." This lack of knowledge was not mended by time, as one attendee attested: "I have been here for the last four years but even I don't know many services that there are in the library." When asked about preferred methods of communication, the

majority requested monthly newsletters by email to update postdocs on events and services and indicated that social media was not an effective communication method.

Lack of Time

Postdocs expressed that time pressures were a major barrier. One interviewee summarized the challenge:

I agree that time is a barrier, especially if we want to publish a study in a higher impact journal; it can easily take at least a year to gather the data and another half year/year for the review process.

The focus group members mentioned lack of time as one reason they don't take advantage of the optional services offered by the library.

Table 1
List of Recommendations to Improve Service to Postdocs

Within the library		Outside the library	
<i>Recommendation</i>	<i>Challenge Addressed</i>	<i>Recommendation</i>	<i>Challenge Addressed</i>
Collect postdoc usage statistics	Visibility	Collaborate with research support offices	Career development; Lab management
Adopt a direct communication approach	Communication	Maintain a central list of services for postdocs	Communication; Software access
Foster welcoming spaces for postdocs	Physical space; Library collections	Expand English language support	Writing/publishing
Market library services at time saving	Lack of time	Increase funding for APC fees	Funding
Collaborate with postdocs	Career development		

Recommendations Within the Library

Collect Postdoc Usage Statistics

Our first recommendation is to include postdocs as a category in collection forms. Postdocs can wind up grouped with staff, employees, or graduate students, but their needs are distinct. By collecting usage statistics, librarians will be able to evaluate their library's current effectiveness and measure the impact from implementing these recommendations.

Adopt a Direct Communication Approach

Typically, postdocs make up a small percentage of the institution, which means that outreach and services can be more directed and do not have to be as scalable as outreach to undergraduate or graduate students. Determine how many postdocs are at your institution and explore the best ways to reach them. Options include direct email to postdocs, contacting their primary mentors, and communicating through a postdoc organization on campus. In our focus groups, all postdocs expressed a preference for email as the primary mode of communication.

Foster Welcoming Physical Spaces

Postdocs showed interest in using library spaces for quiet study or meetings, and as a central social place to network and gather with peers. In our focus group, members indicated a preference for in-person events. Depending on the institution, the library may want to consider utilizing locations in proximity to where the target postdoc population works for in-person events hosted by the library. As many postdocs are under time constraints, it may be worthwhile to consider drop-in or flexible programming.

Market Library Services as Time Saving

Most postdocs are limited to five years, and as a result postdocs feel immense pressure to progress rapidly. At the same time, postdocs do not seem to take advantage of the full range of library services in part because they have the expertise to do the work themselves. One solution is to market services as time saving as opposed to librarian-specific expertise. For example, working with a reference librarian to improve literature search efficiencies or a scholarly communication librarian to identify publishing options can save postdocs valuable time.

Build Mutually Beneficial Collaborations With Postdoctoral Scholars

Focus group members showed an interest in learning both soft skills (such as teaching and mentorship) and technical skills (such as AI, coding languages and scientific visualization). To help postdocs gain these skills, consider following the instruction model put forth by Gau et al. (2020) to partner with postdocs to enrich library instruction. This model is mutually beneficial. Having postdocs who are highly trained in their specialty offer advanced workshops related to their field relieves librarians from having to constantly upskill in the latest techniques. In turn, the postdocs gain valuable teaching experience and pedagogical advice from a seasoned librarian instructor.

Recommendations Outside of the Library

Collaborate With Research Support Offices Outside of the Library

The focus group participants did not make clear distinctions between support that came from the library versus other offices. For example, several of them asked us for help generating grant templates (typically done by Grants Management) or for software support (managed by IT support). Postdocs also wanted to be able to view the full menu of research support services that the institution provides. As one postdoc put it: "I would wanna see more collaboration with other offices or departments to support postdocs, especially as it relates to career development or as it relates to other issues that postdocs encounter." The postdocs expressed a need for more support from senior members at the institution who understand their needs. As one postdoc mentioned:

Starting there with someone who's qualified and who knows the landscape of postdoctoral opportunities and career paths, that would be important to help leverage [the postdoc's] research training as well as the things that they can bring forth and to their next role.

For these reasons, we recommend increasing joint programs and outreach with offices like the Postdoctoral Society, the Graduate School, Institutional Review Board, Grants Management, and Quality Improvement among others.

Create a Centralized List of Research Support Services

To improve library visibility and communication, a centralized list of research support resources and services applicable to postdocs should be developed and maintained. This could be a worthy first action from a library collaboration with other support units. Even if institutional units have generic lists of services, that does not fix the problem needing to be familiar with all the units and navigate their separate systems, nor does it eliminate the tedium of having to sift through generic lists to find services applicable to their career stage and unique needs. Postdocs thought that preparing tailored lists of support to different user groups would be a friendly and effective outreach strategy.

Increase English as a Second Language Support

In 2022, 56% of U.S. postdoctoral scholars were foreign born, many of whom do not speak English as a first language (Smith et al., 2024). This was reflected in the makeup of the focus groups as several participants recounted struggles with English grammar and the U.S. scientific writing style. One solution could include asking a university writing center to extend their services to postdocs, who are sometimes no longer considered students and hence not served by these offices. These types of accessibility improvements will likely benefit all postdocs, as focus group participants regardless of their background struggled with finding support during the writing phase.

Increase Support for Open Access Publishing

As early career researchers, postdocs have less access to funds compared to those further along in their careers. Many postdocs expressed frustration with paying article processing charges (APC) to publish open access, and postdocs from both institutions requested more support for paying APCs. As one postdoc told us: “Recently one of my manuscripts got accepted for publication, but I had to pay a publication fee of \$725 out of pocket.” The issue will only become more pronounced once the “Nelson Memo” becomes effective, requiring a zero-embargo public access of research outputs from U.S. federally funded research (Nelson, 2022). Institutions have begun addressing this issue by brokering transformative agreements or setting aside funds specifically to cover APCs for early career researchers. We recommend ensuring that transformative agreement language clearly includes postdocs as eligible recipients and promoting these cost saving measures directly to postdocs.

Discussion

Our project highlighted some common postdoc struggles to manage the different aspects of their position including research, teaching, professional development, and mentoring responsibilities. Our findings were consistent with prior studies on both postdocs and other early-career researchers, such as a desire for connection at in-person events and opportunities to develop new skills (Gau et al., 2020; Gunapala, 2014; Rempel et al., 2011). The library can help by creating programming aimed at postdocs and addressing their physical space needs. However, since postdocs showed little awareness of the distinctions between different support offices, some of their requests were outside of the sole purview of the library. In these cases, we recommend that the library work with other units across campus to facilitate positive change.

Our results showed that the postdocs’ greatest barrier to library usage was a need for more effective communication about relevant resources to take full advantage of the available research support services. Poor outreach to the postdoc community has been well documented, however there is no consensus on

how to effectively close the gap. In the focus groups, postdocs indicated a desire for direct email communication and web resources. This outcome contrasts with the conclusion reported at Georgia State University in 2012 to conduct outreach through social media (Tomaszewski, 2012). This difference is not surprising given the rapid changes in the social media landscape and illustrates why libraries must frequently reassess which marketing platform to use to stay relevant.

This study's applicability is limited by its sample size. While the focus group research methodology is highly suitable for studying small groups in institutions, we cannot say that our results reflect the experience of postdocs across academic or health institutions in the United States. Rather, we hope our work will inspire our colleagues to undertake similar quality improvement projects at their own workplaces.

Indeed, postdoc's scholarly needs will continue to change as more postdocs come from abroad and the open science movement gains momentum. However, our institutions have not yet caught up. Postdocs expressed a need for more English writing and APC support. Our results agreed with a global survey of the state of open access conducted by Springer-Nature and Figshare which indicated broad support for open access publishing among postdocs but lack of awareness and monetary support for APCs (Hahnel et al., 2023). This is a significant hardship that disproportionately affects early career researchers. The library cannot provide these services alone, but we can act as a partner and empower postdocs to self-advocate for greater support in these areas.

Furthermore, our study dovetails with a broader reckoning on the role and treatment of postdocs in academia. In 2022, the National Institutes of Health (NIH) in the United States assembled a Working Group on Re-Envisioning NIH-Supported Postdoctoral Training, which released its report in 2023 (Advisory Committee, 2023). In response to the report, the NIH announced an 8% pay increase for postdocs, though it fell short of the amount recommended by the Working Group (Heidt, 2024). Additionally, there has been increasing recognition of the high burdens placed on postdocs compounded by a lack of institutional support (Forrester, 2021). Postdocs are typically dependent on the funding of their PI, placing them in a structurally vulnerable and precarious position ("Is Science's Dominant Funding Model Broken?," 2024). While the role of the postdoc is debated on a national stage, we can strive to do our part to improve their working lives through implementing our recommendations for increased library support.

Conclusion

The focus groups revealed that both institutions need to build better support systems to improve the postdoctoral experience. Currently, a postdoc's success is strongly dependent upon their relationship with their primary mentor or PI. To make the postdoc experience more welcoming and equitable, this dynamic needs to be uncoupled by increasing and standardizing the institutional support for this critical stage in trainee development. Postdoc associations or offices are known to improve institutional support for postdocs (Bruckmann & Sebestyén, 2017). We believe that as a central unit the library can also be an instrumental driver for this change.

There were some surprising incidental benefits from conducting this study. The act of advertising the focus group itself not only made some postdocs more aware of library services, but also portrayed the librarians as welcoming and invested in their specific needs. For example, a postdoc commented: "[I'm] quite new here, but also because [I'm] new, I wanted to join this meeting to gain more information about

library services.” The act of conducting the focus groups served as outreach to postdocs, and we have seen an uptick in the number of postdocs reaching out to librarians following the sessions.

We are already implementing the recommendations from this study in our libraries. At Northwell, we plan to launch a writing group for trainees. This writing group will allow postdocs and other trainees to read drafts of each other’s scholarly work and provide peer feedback in a semi-structured environment. We hope this will help address the gap in scholarly writing support our focus group participants identified and establish the library as a welcoming and supportive space for new users. At UAB, we conducted a workshop on open access publishing specifically for the postdoc population to demonstrate that the library provides services specifically for their needs, while addressing the gap in knowledge around open access identified in the focus groups.

This study also exemplifies the power of the focus group methodology for quality improvement and program assessment projects, especially for isolated or smaller communities. Many of these populations are “hidden” or “silent” in institutional data gathering because their numbers are small. Some of these groups face additional societal discrimination. The phenomenon of erasure of small groups from datasets has been well documented in non-institutional cases, for example by the Urban Indian Health Institute (2021) in regard to poor representation of Native Americans in COVID-19 public health datasets. In our institutions, we can work to make sure that this type of data collection omission does not happen by using methods beyond the survey to gather patron feedback.

Author Contributions

Lena Bohman: Conceptualization, Methodology (lead), Analysis (equal) Writing – original draft, Writing – review and editing (equal) **Regina Vitiello:** Methodology, Analysis (equal), Writing – original draft, Writing – review and editing (equal) **Marla Hertz:** Conceptualization (lead), Methodology, Analysis (equal), visualization, Writing – original draft (lead), Writing – review and editing (equal)

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Appendix A

Focus Group Questionnaire

1. [Institution] has a number of resources that can help you with your research. Which ones do you use most often? How (or where) do you find out about them? For example: biostatistics support, librarians, reading groups, events.
2. What do you think is the biggest barrier for postdocs in doing their research?
3. Do you currently use the library at [Institution]?
4. The library offers a variety of services. I'm going to list three of them and I want to know which is the most important to you, and which is the least important.
 1. 4a. Assistance with a literature search,
 2. 4b. Help selecting a journal for your manuscript
 3. 4c. Providing access to and support for software such as GraphPad, endnote, and biorender.
4. Suppose that you were in charge of the [Institution] library for a day and could make one change. What would you do? (why did you choose that?)
5. What skills do you want to learn during your postdoc training?
6. What do you think is the most important piece of feedback you have for our library services?
7. Is there anything we should have asked you about but didn't?

Appendix B

Codebook

Tag	Description	Number of highlights
AI	Relating to AI such as use of, tools for, ethics surrounding use	12
CareerDevelopment	Generally related to career development	46
CareerDevelopment.Advancement	A subset specific to preparing for and navigating the job market	16
CareerDevelopment.Networking	A subset specific to building professional contacts	5
Communication	How the library shares information about its services and resources and how it hears from postdocs	42
Funding	Relating to funding, salary, cost of doing research, cost of publishing etc	25
Funding.Grants	A subset specific to procuring grant funding	25
LabManagement	Relating to the management of laboratory spaces, research programs, and research projects	11
LackOfTime	Relating to lack of time	20
LibraryPhysicalSpace	Relating to the physical spaces of the library	17
LibraryCollections	Relating to the use of library collections. Not software or personnel support	27
LibraryServices	Pertaining to use of services provided by librarians, does not include software or collections	50
LibraryServices.EventDelivery	Preferences for how Events are delivered to postdocs (ie, in person or virtual)	7
Mentorship	Relating to both the postdocs mentors and learning how to be better mentors themselves	22
Other	Other	10
PublishingWriting	Support for publishing, writing, finding journals, etc	36

PublishingWriting.JournalChoice	Choosing a journal for a postdoc manuscript.	15
PublishingWriting.LanguageNeeds	Specific language needs writing, may pertain to ESL	7
ScientificVisualization	Relating to data visualization, scientific communication	10
SoftwareAccess	Pertaining to the use of software provided by library	50
Visibility	Visibility of library services or other support services	19
Visibility.LibraryAwareness	Lack of awareness of services used from the library	33