

A call for action
Engaging to save lives

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CONGRESS PROCEEDINGS



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INTRODUCTION

The International Congress of Medical Librarianship (ICML) provides a unique opportunity for professional development and networking for librarians in the country and region in which it is held. **The Association for Health Information and Libraries in Africa (AHILA)** were the perfect partners. Combining these international and regional conferences provided an important platform to hear about the latest research, share learning and discuss best practice. The 13th ICML Congress was a **blended** event, open to participants and sponsors **both in person and online**.

With less than ten years to achieve the [UN Sustainable Development Goals](#), the congress' theme ***A call for action: Engaging to save lives*** reflects the contributions that medical librarians and other information professionals are making to achieve global health goals by connecting, engaging, and ultimately improving health and saving lives.

The congress was held from 15th to 19th March 2022 at the Protea Hotel Fire & in Pretoria, South Africa.



GALLERY





Partnership working to benefit patients and the public: Benefits, challenges and recommendations from four projects

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Abstract:

Partnership working involves two or more organisations working collaboratively to achieve a common goal. In England, partnership working between healthcare organisations and public library services is recommended to enable patients and the public to easily access high quality health information. This paper discusses the working partnership between Royal Papworth Hospital Library and Knowledge Service (LKS) and Cambridgeshire Libraries (CL).

Over a three-year period between 2018-2021, we jointly undertook four projects which focused on the themes of health information, health literacy and patient experience. This paper will present the background to the projects and discuss how the partnership was first established around a national campaign to highlight Health Information Week. It will summarise each project, the associated aims, and the subsequent outcomes.

The presentation will outline the mutual benefits of the collaboration which included opportunities for innovation and service improvement, professional development, and reaching new communities. The challenges related to communication, organisational factors and evaluation are addressed. Finally, we offer our recommendations to health library colleagues wishing to undertake joint projects or a collaborative partnership to inform their future planning and practice.

Keywords: partnership working, collaborative working, health libraries, public libraries, health information

Introduction

Partnership working can be defined as two organisations working together on planning,

implementing and evaluating their shared services “each with their own perspectives and skills but combining effectively as a unified whole” [1]. Effective partnerships require commitment and take time to establish [2]. Successful projects require a shared vision as well as clear aims and objectives. In England, partnership working between health libraries and public libraries is recommended to enable patients and the public to access quality health information [3]. Collaborative projects can improve access to health information and contribute improvements in our service users’ health and wellbeing. Between 2018-2021, Royal Papworth Hospital Library and Knowledge Service and Cambridgeshire Libraries jointly undertook four projects. This paper will briefly summarise each of the projects and then discuss the benefits, challenges and recommendations.

Background

Royal Papworth Hospital (RPH) is a specialist acute hospital delivering excellent care for patients with heart and lung diseases; it is a national centre for organ transplant. The hospital is situated on the outskirts of the city of Cambridge. The Library and Knowledge Service is an embedded service located within the clinical setting [4]. As there is not a traditional library space, services are not easily visible to patients or the public.

Cambridgeshire Libraries (CL) is a public library service serving residents across the county of Cambridgeshire. A wealth of services are provided in multiple formats: online, in branch, mobile and at home (for housebound customers). Innovative programmes include arts, theatre, music, and family-focused events as well as business and intellectual property support for start-up businesses. Public library provision in England centres around a model of ‘four universal offers’ with health and well-being as one of these central pillars [5]. The Cambridgeshire Health Information Service (CHIS) was a key driver in the development of our partnership establishing a link between our two distinct organisations. CHIS is a commissioned service and a policy commitment of the Public Health Directorate (PHD) of Cambridgeshire County Council. Receiving guidance and ongoing support from PHD, CHIS has its county-wide service provision embedded within Cambridgeshire Library Service. CHIS collaborates with local service providers from health, public and community sectors, supports their initiatives in improving health and wellbeing of the local population, and supplies them and their end users with health information and health promotion resources. The two joint projects—Health Information Week and health literacy awareness workshop—are in accordance with its objectives of providing reliable health information to the public and contributing to skills improvement of the public library service.

Health information week

The partnership between RPH and CL began with an initial project to celebrate Health Information Week in 2018. Health Information Week is a cross-sector national campaign to enable access to quality health information [6]. The project’s aim was to raise public awareness of the good quality health information sources available to them and to celebrate the 70th anniversary of the National Health Service (NHS). The project was a day-long event hosted at the Cambridge city centre branch and involved three different talks by Royal Papworth Hospital staff for the public, an exhibition of the history of the NHS in Cambridge and a pop-up health information stall. The ‘hook’ to attract patrons to the stall was a hula-hoop challenge and the prize was a voucher for a local community leisure centre. The

existing awareness of this campaign across our organisations opened the door to thinking about ways of working together.

Project team members familiarised themselves with resources and recommendations from the Health Information Week national project team [7] prior to the first meeting. This created a shared vision and focused our discussions. As it was our first experience of joint planning, we aimed to keep it simple. Tasks were assigned to different members of the project team based on skillset and expertise. For example, the press release was drafted by the RPH Heritage Officer who worked within the Communications Team. The RPH Library Manager planned a talk on how to find quality information sources and see behind the tabloid headlines. The CL Local Studies Librarian sourced and created the photographic exhibition of the history of the NHS in the local area. The Community Health Information Service provided leaflets for the stall which focused on common heart and lung conditions as well as sleep quality and healthy eating.

Public engagement with the event was positive with 55 interactions between the public and RPH and CL staff, 211 quality health information leaflets taken. However, attendance at the talks was lower than expected. Following the event, we met for an after-action review [8]. We identified areas for improvement and these focused on the need for additional lead-up time for marketing and promotion, targeting our marketing at more specific groups and finding an online document sharing site that was accessible at both organisations [9].

Health literacy awareness workshop

The World Health Organization define health literacy as “the personal characteristics and social resources needed for individuals and communities to access, understand, appraise and use information and services to make decisions about health” [10]. Evidence suggests that public library staff lack confidence in answering health related enquiries and have limited knowledge of the concept of health literacy [11]. This knowledge gap can be addressed through continuing professional development opportunities; for example, public library staff who undertook training courses from the National Library of Medicine in the United States reported a positive impact on their confidence and competence in supporting their patrons to access health information [12]. Thus, the aim of the second project was to increase CL professional librarians’ knowledge and understanding of the concept of health literacy.

The RPH Library Manager delivered a one-day workshop on the topic of health literacy awareness to CL librarians (n=7). The workshop content was designed by the Community Health Learning Foundation (CHFL) [13], a leading voluntary sector organisation in the health literacy domain. Key deliverables from the workshop included the “teach back” technique, “chunk and check” and principles for accessible written information [14]. CHFL provided a standardised evaluation form [15] to measure the increase in participants’ knowledge and understanding of health literacy and its relevance to their role. All participants reported an increased understanding of the concept of health literacy and increased confidence in communicating with others on the topic after attending the workshop. Further, one participant was empowered to contact a health organisation about the inaccessible format of an information leaflet for their patrons due to the font size and layout. This led to the leaflet being revised. This small change in practice supports Whitney et al’s [16] argument that the outcomes of health literacy interventions are more likely to be effective when different types of library work in partnership. The sharing of knowledge and expertise can lead to mutually beneficial outcomes for the organisations and their patrons. The RPH Library Manager delivered a further three sessions of the workshop as condensed one-hour

webinars to enable attendance of frontline customer service staff working across CL. This demonstrates that a successful partnership takes time to develop and, as trust grows between partners, further opportunities may arise.

Audiobooks for patients

The third project arose through a request from the occupational therapy department at RPH for the provision of audiobooks for patients' use. Patients awaiting cardiac surgery can experience stress and anxiety during the preoperative period [17] and those awaiting an urgent heart transplant can be hospitalised for weeks [18]. Audiobook listening has been shown to "stimulate positive memories", provide a "positive distraction" and help as a sleep aid in patients recovering from stroke [19-21]. Therefore, the aim of this project was to improve the patient experience.

Financial constraints limited the possibility of providing an audiobook platform for the hospital. A solution was found through our partnership. CL supplied 7 digital devices for loan to RPH patients. These devices provided access to over 5000 audio and ebook titles. Wipeable covers were funded by Royal Papworth Hospital Charity (RPHC) and earphones were purchased for each patient who wished to use a device. Occupational therapy staff recommended the service to our long-stay patients and managed the circulation of devices. Limited time was available to gather data to assess the impact of this service because of the pandemic and additional pressures on clinical staff. However, a small sample of ten feedback forms provided an insight into patients' views. Eight out of ten patients reported feeling a "little" or "much" better after using the service. Patients' written comments indicate that they found the audiobooks "soothing", "relaxing" and a form of "escapism". Three patients rated the choice of audiobooks available as "average to good"; seven rated the choice as "good to excellent". The collaboration between our services enabled the development of this provision which has shown some potential benefits for patients awaiting surgery.

Read a little aloud for critical care

The final project summarised here is the most ambitious and is a testament to the success of partnership. During the coronavirus pandemic, patient visiting in hospitals was severely restricted; as a result, patients experienced increased anxiety, depression and social isolation [22]. This difficulty prompted a RPH Consultant in Intensive Care to seek alternate ways of bringing human connection into the hospital. The outcome was a truly collaborative six-month pilot project between RPH and CL: Read a little aloud for critical care. The project's aim was to increase social interaction for patients in critical care and to provide a soothing distraction to aid their recovery. The RPH Library Manager secured funding from RPHC to commission CL to provide a twice weekly online shared reading session over Microsoft Teams. CL trained staff across their branches to deliver the virtual service. The twice weekly sessions were scheduled for the patients' 'quiet' time with critical care staff setting up the iPads for the patients to listen to the readings. CL designed the readings around a theme which evoked reminiscence such as holidays or winter. CL had expertise in this area of shared reading. Trust, respect and commitment to our partnership had been established through the previous projects; consequently, RPH were confident that the service would be high quality and reliable. The funding enabled CL to offer a development opportunity to their staff and provide a service to a new community.

A survey was conducted of critical care staff at the end of the 6-month pilot. 18 critical care staff responded. 72% of respondents agreed or strongly agreed that the project benefited critical care patients. Critical care staff frequently mentioned that the project "encouraged

normality” and that it helped to “ease frustration” for the patients [23]. The most significant challenge cited was the critical care environment which can be unpredictable, noisy and time poor. One staff member responded that the biggest barrier for patient participation was “increased activity on the unit – emergencies, CT scan trips”. Consequently, this translated into CL staff delivering the virtual sessions without the contextual knowledge of the clinical pressures on the unit on any given day. Critical care staff delivered a training session to CL’s staff prior to the project commencing to develop their understanding of the critical care environment. Although this provided an insight, it did not fully prepare them for delivering an online reading session where they had very little knowledge of what was happening in critical care during the session. Despite these challenges, the project was highly regarded and going forward, a bid has been made for a year long project expanded to other hospital wards.

Benefits

Both RPH Library Service and Cambridgeshire Libraries are proud to be in partnership and the joint working has been overwhelmingly positive. There are five key areas with clearly defined benefits for our services: innovation and service improvement, sharing skills and expertise, professional development opportunities, reaching new communities and sharing resources.

Partnership working has spear-headed innovation and service improvement. Firstly, through having an open mindset as to what is possible and then secondly, planning services and problem-solving together to meet the mutually agreed goals. Service improvements which directly benefit patients and improve their experience are valued by the wider RPH organisation. This raises the profile of the library service and demonstrates the contribution that it makes in providing excellent care for patients.

New projects are achieved through the sharing of skills and expertise. For example, CL staff had expertise in delivering online reading sessions to their patrons and this enabled the development of a new service for our patients beyond anything we had the knowledge or capacity for in our own team. Further, this then led to new opportunities for more of their staff to be trained and involved in the project. The sharing of expertise also enabled the delivering of health literacy awareness training and thus benefitted the patrons of CL. A shared understanding of the challenges which individuals experience when seeking health-related information is important so that services in the community can be designed to meet their needs. Partnership working allowed both organisations to reach new audiences whether it be to enable access to audiobooks or to pick up a quality health information leaflet. Finally, we have been able to share resources, bid for funding and make financial savings through our joint planning and delivery. These benefits are welcome in times when library budgets are considerably constrained.

Challenges

It is important to acknowledge that there are additional complexities when two organisations work in partnership. The challenges we experienced through our joint projects related to communication, organisational factors, and evaluation. Communicating to our respective patron groups required additional time built into project plans as approval for official publications such as press releases and marketing materials needed to be agreed by both organisations. There is more time required to produce promotional materials and then market to appropriate service users. Technology also impacted on our communications. It proved difficult to find an online document sharing website that both partners could access. Each organisation had different video conferencing platforms and document sharing processes and

procedures, and these did not coalesce. Cyber security was a concern for both organisations and this meant certain websites were not accessible. Consequently, documents were often emailed back and forth.

Organisational factors also impacted our partnership working. The hospital's primary driver is the care and safety of the patients. The hospital context was constantly changing during the pandemic due to surges in Covid-19 admissions. This meant that scheduled activities for the projects had to be delayed. The clinical environment also impacted the projects too. Read aloud for critical care is a key example of the clinical needs of the unit impacting on whether patients were able to participate. Availability of library staff in both services was a factor in the long timescales required for planning and implementing projects. Annual leave, staff sickness and vacancies all needed to be considered to ensure successful outcomes.

Finally, we experienced challenges in the evaluation of the projects. We measured the number of interactions with patrons during health information week. However, it is impracticable to determine how the individual later used the health information taken from the pop-up stall. It was easier to collect evaluation data where there was an established evaluation form and a clear opportunity to implement it, for example in the health literacy awareness training. Whereas for patient feedback, we relied on the occupational therapy team to implement and collate patient feedback forms for the audiobook project. This was not always possible due to the previously mentioned clinical pressures. As a result, data collection was not systematic, and any insights were limited. Further, health care data is by nature highly sensitive. Thus, it was difficult to share feedback with partners beyond a broad overview of patients' views. It is advisable for future projects that outcome measures to determine success are specified at the outset and that informed consent for sharing patient feedback is obtained as part of the data gathering process. Health librarians may require further training or support from research departments in evaluation methods and informed consent to enable them to collect patient feedback data.

Recommendations

The following recommendations are offered to health and public library colleagues considering embarking upon a collaborative partnership. Firstly, start with a small-scale project and allow the partnership to grow over time and develop mutual trust and respect. Secondly, build additional time into the planning phase of projects to mitigate any unforeseen barriers in communication and organisational processes. Thirdly, actively listen to the voice of the partner organisation and embrace their skills, knowledge, and expertise. Knowledge management tools can be useful to elicit lessons learned [24]. Fourthly, provide opportunities for reflection and formal evaluation and wherever possible set outcome measures during the planning phase so the effectiveness of the project can be measured. Finally, it is recommended that mistakes are acknowledged as part of the learning processes and that the many successes are celebrated.

Conclusion

This paper has discussed the collaborative partnership between Royal Papworth Hospital Library Service and Cambridgeshire Libraries during 2018-2021. Four projects which were jointly planned and delivered were summarised as examples of how health and public libraries can work together to benefit patients and the public: health information week, health literacy awareness training, audiobooks and read a little aloud for critical care. The benefits of partnership working in driving forward innovation and service improvement were highlighted. Additional challenges experienced through the collaboration were identified as

organisational factors, communication, and evaluation. Recommendations are shared as lessons learned from this partnership to inform to health and public library colleagues wishing to undertake joint projects or a collaborative partnership to inform their future planning and practice.

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Title of Paper

Collaboration among Medical Librarians in Africa: Evidence from a Pilot Survey

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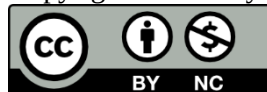
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Abstract: Collaboration among professional colleagues is a critical component of professional development. Although there have been studies assessing collaboration among medical librarians in different countries, few have investigated collaboration among African medical librarians. The objectives of this study were to determine whether medical librarians collaborate, identify areas of collaboration and the reported benefits of collaboration. The study was a cross sectional survey among medical librarians in 10 African countries. A questionnaire was designed using Google form and the link was sent to medical librarians in Africa through the Association for Health information and Libraries in Africa (AHILA), Medical Library Association of Nigeria (MLA-NG), and Network of African Medical Librarians (NAML) online forums. Analysis of data was descriptive. A total of 50 respondents completed the survey, more than half (58.0%) were from Nigeria followed by Zambia (20.0%). There were slightly more females (52.0%) than males (48%); majority (70.0%) have Master's degree in librarianship. A large majority (90.0%) reported that they had collaborated on research and projects with professional colleagues. The main collaborative activities were scholarly writing, books and manuscript development, building of institutional repositories, training and consortia on subscription of electronic resources. The reported key benefits of collaboration were promotion of professional growth and development (80.0%), and keeping abreast with current best practices in the profession (76.0%). The three areas where respondents have high levels of collaboration are advocacy for access to equitable health information (64%), seeking funding for

innovative projects/workshops (62.0%), digitization of local contents and building of institutional repositories (60.0%) and capacity building and conference organization (54.0%). Medical librarians in Africa are actively engaged in collaboration with professional colleagues and should be encouraged to sustain it.

Keywords: Collaboration, Medical librarians, Africa, Health information, Information dissemination

Background

Africa's burden of infectious and chronic diseases which is the largest in the world has been a great concern to health and information experts (Anasi, 2012; World Health Organization Regional Office for Africa, 2019). The overwhelming health challenges range from continual high rates of infectious diseases to rapidly growing chronic non-communicable diseases such as human immune deficiency virus (HIV) infections, tuberculosis, cancers, diabetes, hypertension, anemia, malaria, measles, viral hemorrhagic diseases and so on (Anasi, 2012, Ihekweazu and Agogo 2020). According to Nkengasong and Tessema (2020) the bulk of the estimated 10 million deaths per year resulting from infectious diseases takes place in Africa.

At present, Africa has its fair share of the global pandemic of coronavirus (Covid-19) ravaging the world. From Egypt in February 14, 2020 to Lesotho in May 13, 2020 the virus keeps spreading and the number of new daily confirmed cases keeps rising rapidly with a particularly severe situation in South Africa, Egypt, Algeria, Morocco and Cameroon (OxfordAnalytica, 2020; Ozili, 2020). According to World Health Organization (2020) as at the end of April 2020, Africa has recorded a cumulative total of 20,652 cases and 861 associated deaths (case fatality ratio 4.2%) have been reported across 45 countries, the highest mortality have been recorded in Algeria 12.6% (425/3382), Liberia 9.7% (12/124), Democratic Republic of the Congo 6.1% (28/459), Mali 5.9% (23/389), Burkina Faso 6.6% (42/632), and Niger 4.2% (29/696)

In times like these, Africans need unfettered access to health information. Medical librarians as health information professionals need to form a common front in order to tackle the daunting health challenges in the continent. For instance, at the outbreak of coronavirus, the health care professionals in Africa formed an alliance to develop Africa Joint Continental Strategy for COVID-19 coordinated by Africa Centres for Disease Control to address the rising health issues (MassingaLoembe', Tshangela, Salyer, Varma, Ouma and Nkengasong (2020). Weekly virtual coordination meetings to ensure timely dissemination of information about coronavirus were held by health experts (MassingaLoembe', Tshangela, Salyer, Varma, Ouma and Nkengasong (2020). Health information professionals also need to collaborate to provide equitable access to health information. Undoubtedly, the black holes of health information deficit in urban and rural Africa demands partnership and collaboration among African medical librarians. Gathoni (2012) acknowledged the strategic role of professional networks in improving access to and use of health information in Africa. The Network of African Medical Librarians (NAML) and Association for Health Information and Libraries in Africa are partnering with several international organization such as Office of Global AIDS of the United States Department of State, the Elsevier Foundation, National Library of Medicine, Partnerships in Health Information (PHI) among others to enhance access to health information in Africa (Ajuwon, Chigbundu, Omogbai, and Agwu, 2020; Godbolt, Stanley, Sturges, 2019; Shaw, 2012)

Indeed, collaboration is the key to effective response to Africa's endemic disease burdens and health information conundrum. The word collaboration according to Pham and Tanner (2014, p.22) "is a complex concept that is often used interchangeably with coordination, cooperation, partnership and coalition, although they denote different layers of meaning and purpose as well as degree of relationship". Axelsson, Sonnenwald, and Spante (2006) described collaboration as human behaviour among two or more individuals that facilitates the sharing of meaning and completion of tasks with respect to a mutually-shared super ordinate goal.

Comprehensively, Pham and Tanner (2014, p.23) defined collaboration as:

"an interactive process among internal and external stakeholders who work together to communicate their knowledge, skills, resources and authority in planning, designing, decision making and problem solving process for the achievement of a mutual goal".

Collaboration can facilitate access to expertise, exploitation of available resources and technologies, creation of new knowledge or exploitation of existing knowledge, curriculum development, capacity-building and training (Melin, 2000; Pham and Tanner, 2014). Hara, Solomon, Seung-Lye and Sonnenwald (2003) stressed that collaboration addresses critical research problems, constant changes of technology and vibrant development of knowledge and expertise. Supporting this view, Gathoni, Chimwaza, Godbolt and Msengezi (2013) opined that collaboration enables easy and speedy communication, joint solving of problems, provision of a unique source of knowledge and expertise, resource exchange, coalition building, promoting of public access to health information.

There is a robust body of literature showing health science librarians collaboration in different research and project activities. Ellero (2009) examined collaboration among health science librarians for the implementation of electronic medical record. The study reported that 53% of survey responders favoured or participated in electronic medical record development. Ajuwon, Kamau, Kinyengyere and Muziringa (2017) reported a collaboration between academic health sciences librarians, public and community librarians and some non-governmental organization in four African countries (Kenya, Nigeria, Uganda, and Zimbabwe) to carry out a successful consumer health information project. Through this collaboration a total of 65 librarians from 34 public and community libraries were trained on how to access and use consumer health information resources by health sciences librarians in the selected countries. This project was funded by the Elsevier Foundation.

A survey of challenges health science librarians face when collaborating on systematic reviews was conducted by Nicholson, McCrillis and Williams (2017). The study found that the most frequent and challenging issues relate to development of the research question and general communication with team members. Ibegwam, Unobe and Uzohue (2019) explored collaboration between health science librarians and medical research institutes in support of access to health information in Nigeria. The study revealed that the major barriers to collaboration were funding and financial issues, poor power supply, lack of vision, fear of loss of control, lack of telecommunication facilities among others.

Globally medical librarians are embracing collaboration and partnership for improved access to health information (Godbolt, Stanley, Sturges, 2019; Gathoni, Chimwaza, Godbolt and Msengezi, 2013). This is evident in the upsurge of collaborative projects and research works, exchange programs, budget management, curriculum planning and development, capacity building and conferences, among others (Godbolt, Stanley, Sturges, 2019; Ajuwon, Kamau, Kinyengyere and Muziringa, 2017; Ukachi, 2016).

However, a literature search revealed a dearth of studies on African medical librarians' collaboration for enhanced access to health information in Africa. It is against this backdrop that this study investigated collaboration among medical librarians for improved access to health information in Africa. The study will document medical librarians' extent of participation in collaborative activities, their attitude towards collaboration, their perception of the benefits of collaboration and challenges faced when collaborating for access to health information.

Research Questions

The following research questions will guide the study:

1. Do medical librarians in Africa participate in collaborative projects/researches and in what areas?
2. To what extent have medical librarians in Africa participated in collaborative projects/researches that promote access to health information?
3. What Information and Communication technology (ICT) tools/platforms do medical librarians in Africa use for collaboration activities?
4. What are the medical librarians' perceptions of the benefits of collaboration for access to health information?
5. What is the attitude of medical librarians towards collaboration for access to health information?
6. What challenges do medical librarians in Africa face when collaborating for access to health information?

Methods

The study was a cross sectional survey among medical librarians in 10 African countries. A questionnaire was designed using Google form and the link was sent to medical librarians in Africa through the Association for Health information and Libraries in Africa (AHILA), Medical Library Association of Nigeria (MLA-NG), and Network of African Medical Librarians (NAML) online forums. Analysis of data was descriptive.

Empirical Results

Demographic information of respondents

A total of 50 respondents completed the survey, more than half (58.0%) were from Nigeria followed by Zambia (20.0%). There were slightly more females (52.0%) than males (48%); majority (70.0%) have Master's degree in librarianship. The demographic information of respondents is presented in Table 1.

Table I: Demographic Distribution of the Respondents

Demographic Data	Options	Frequency	%
Name of Country	Nigeria	29	58.0
	Kenya	2	4.0
	Tanzania	1	2.0
	Zambia	10	20.0
	Zimbabwe	1	2.0
	Mali	3	6.0
	Liberia	1	2.0

	Cote d Ivoire	1	2.0
	Burkina Faso	1	2.0
	Cameroon	1	2.0
Gender	Male	24	48.0
	Female	26	52.0
	Total	50	100.0
Age	31-35yrs	5	10.0
	36-40yrs	12	24.0
	41yrs and above	33	66.0
	Total	50	100.0
Working Experience	1-5yrs	3	6.0
	6-10yrs	12	24.0
	11-15yrs	14	28.0
	16-20yrs	7	14.0
	21yrs and above	14	28.0
	Total	50	100.0
Highest Educational Qualification	PhD	7	14.0
	MLS	35	70.0
	BLS	8	16.0
	Total	50	100.0
Status	Assistant Librarian	16	32.0
	Librarian 2	4	8.0
	Librarian 1	3	6.0
	Senior Librarian	14	28.0
	Reader/Associate/Deputy Librarian	3	6.0
	University Librarian/ Professor/Director	10	20.0
	Total	50	100.0

RQ1: Do medical librarians in Africa participate in collaborative projects/research and in what areas?

Data generated on medical librarians' participation in collaborative projects and researches are presented in Table II. The result of the analysis in Table II revealed that a large majority (90.0%) reported that they had collaborated on research and projects with professional colleagues. The main collaborative activities were scholarly writing, books and manuscript

development, building of institutional repositories, training and consortia on subscription of electronic resources.

Table 11: Medical librarians' participation in collaborative projects/researches

Responses	Frequency	%
No	5	10.0
Yes	45	90.0
Total	50	100.0

RQ2: To what extent have medical librarians in Africa participated in collaborative projects/researches that promote access to health information?

The responses in Table 111 revealed that the respondents unanimously agreed that they collaborate in all the areas indicated in the Table except for curriculum development of medical librarianship and translation of health information into indigenous languages which had mean rating of 1.96 and 1.64 respectively.

Table111: Areas and Extent of Collaboration for Access to Health Information

Areas of Collaboration	VGE	GE	SE	NR	Mean	Remark
Digitization of local content and building of Institutional repositories	15(30.0)	15(30.0)	11(22.0)	9(18.0)	2.72	To a great extent
Advocacy for equitable health information access	14(28.0)	18(36.0)	8(16.0)	10(20.0)	2.72	To a great extent
Seeking of funds for innovative projects/workshops	10(20.0)	21(42.0)	9(18.0)	10(20.0)	2.62	To a great extent
Capacity building and conference organization	15(30.0)	12(24.0)	9(18.0)	14(28.0)	2.56	To a great extent
Repacking of health information into diverse formats	6(12.0)	18(36.0)	13(26.0)	13(26.0)	2.34	To a great extent
Procurement of cutting edge ICT Infrastructure	10(20.0)	10(20.0)	12(24.0)	18(36.0)	2.24	To a great extent
Curriculum development of medical librarianship	6(12.0)	8(16.0)	14(28.0)	22(44.0)	1.96	To a small extent
Translation of health information into indigenous languages	4(8.0)	8(16.0)	4(8.0)	34(68.0)	1.64	To a small extent

Note: NR- Not Really; SE- Small Extent; GE-Great Extent; VGE-Very great Extent

RQ3: What Information and Communication technology (ICT) tools/platforms do medical librarians in Africa use for collaboration activities?

The four prominent ICT tools/platforms that the respondents used for collaboration were:

- (1) Email- 41 (82 per cent);
- (2)WhatsApp - 33 (66 per cent));
- (3)Mobile phones - 33 (66 per cent); and
- (4)Zoom - 30 (60 per cent)

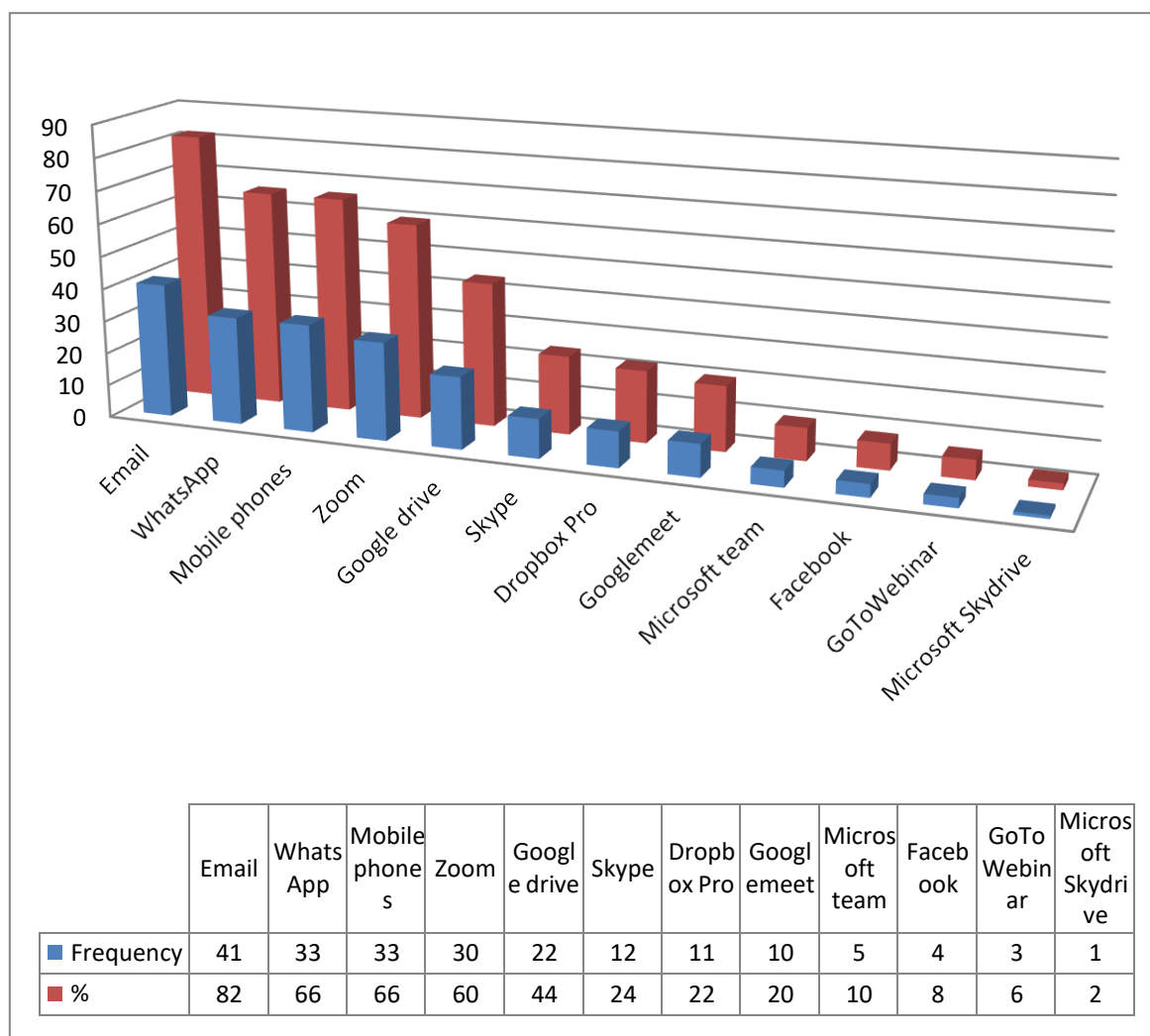


Figure1.A bar chart showing ICT tools/ platforms Medical librarians' use for Collaboration

RQ4: What are the medical librarians' perceptions of the benefits of collaboration for access to health information?

Table IV: Medical librarians' perceptions of the benefits of collaboration for access to health information

Benefits	Frequency	%
Promotes professional growth and development	40	80.0
Helps to advance professional practice	39	78.0
Keep up-to-date with developments in the profession	38	76.0
Ensures best practices in the profession	33	66.0

Facilitates collaborative learning and innovations	34	6.0
Creates room for cross fertilization of ideas for improved performance	31	62.0
Aids access to financial grants for innovative projects	19	38.0
Creates opportunity for mentoring emerging leaders	25	50.0
Opens door to multiple sources of funding for a single initiative	16	32.0
Effective means of developing potentials/capacity building	24	48.0
Aids coordination of advocacy programmes	20	40.0
Promotes benchmarking and standardization of medical library processes	23	46.0
Reduces costs and duplication of efforts	27	54.0

RQ 5: What is the attitude of medical librarians towards collaboration for access to health information?

The analysis in Table V revealed that all the items listed attracted high mean scores except the item which states that “using the collaborative tools is tedious and very demanding” which had a mean score of 2.24. This showed that medical librarians have positive attitude towards collaboration.

TableV: Respondents’ Attitude towards Collaboration for Access to Health Information

	SA	A	D	SD	Mean	Remark
I acquire cutting edge skills and competencies through collaboration	31(62.0)	17(34.0)	2(4.0)	0(0.0)	3.58	Strongly Agree
Collaboration is the best way to provide equitable access to health information	31(62.0)	16(32.0)	3(6.0)	0(0.0)	3.56	Strongly Agree
Collaboration creates opportunity to address complex issues and problems	31(62.0)	16(32.0)	3(6.0)	0(0.0)	3.56	Strongly Agree
I enjoy participating in collaborative projects /research	33(66.0)	11(22.0)	5(10)	1(2.0)	3.52	Strongly Agree
Collaboration builds trust among professional colleagues	27(54.0)	19(38.0)	4(8.0)	0(0.0)	3.46	Agree
My professional passion and enthusiasm is high when I collaborate	26(52.0)	18(36.0)	6(12.0)	0(0.0)	3.40	Agree
Collaboration opens the door for funding opportunities	23(46.0)	23(46.0)	4(8.0)	0(0.0)	3.38	Agree
Collaboration promote increased monitoring and information sharing	28(56.0)	15(30.0)	5(10.0)	2(4.0)	3.38	Agree

on diseases						
Collaboration prepares me for future leadership roles	21(42.0)	24(48.0)	5(10.0)	0(0.0)	3.32	Agree
Collaboration promotes even development of medical libraries	25(50.0)	14(28.0)	10(20.0)	1(2.0)	3.26	Agree
Collaboration facilitates digitization of resources	13(26.0)	22(44.0)	12(24.0)	3(6.0)	2.90	Agree
Using the collaborative tools is tedious and very demanding	6(12.0)	11(22.0)	22(44.0)	11(22.0)	2.24	Disagree

Note: SA- Strongly agree; A- Agree; D- Disagree; SD- Strongly disagree;

RQ 6: What challenges do medical librarians in Africa face when collaborating for access to health information?

The seven leading challenges medical librarians face when collaborating for access to health information were:

Absence of support systems that encourage collaboration 74%

Lack of awareness about the ultimate benefits of collaboration 72%

Inadequate funding 70%

Lack of awareness of the existence of collaborative tools/platforms 70%

Dearth of ICT infrastructures/facilities 62%

Lack of interest in collaborative initiatives 58%

Lack of relevant ICT skills 54%

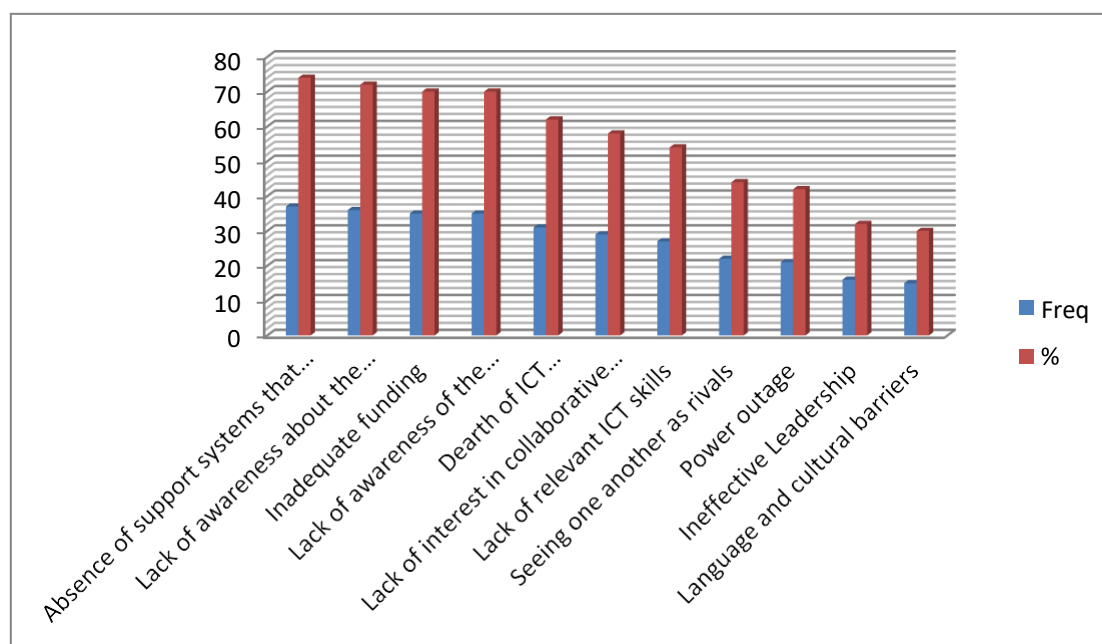


Figure 2:A bar chart showing challenges medical librarians face when collaborating for access to health information

Conclusion and Recommendations

Medical librarians in Africa are actively engaged in collaboration with professional colleagues and should be encouraged to sustain it. Medical librarians in Africa should take advantage of emerging ICT tools and platforms such as Zoom, Microsoft team, Googlemeet, Google form and so on that offer exciting experience to collaborate with one another. The Association for Health information and Libraries in Africa and Network of African Medical Librarians should inculcate the culture of collaboration among medical librarians. The benefits far outweigh the challenges.

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Supporting the Latinx Community's Health Needs in Southwest Virginia - Partnerships and Collaboration during the COVID-19 Pandemic: A Methodology Paper

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Abstract: *The Latinx community in southwest Virginia is isolated and vulnerable, with many of their members undocumented and unable to access quality health, education, and social resources, all exacerbated by the COVID-19 pandemic. As part of a collaborative oral history project focusing on the Latinx community, the authors detail their experiences as information professionals managing a transdisciplinary oral history project, and how inclusive, collaborative practices, rooted in community-based participatory research (CBPR) methods can be translated into combating health disparities of vulnerable communities. Medical and information professionals, along with the impacted communities and mutual aid organizations must come together in sharing resources, information, and ideas to address global health inequities. Marginalized communities of color need to be included, not just as active participants but as the momentum leading discussions around solutions for global health inequities.*

Keywords: community-based participatory research, oral history, health literacy, Latinx, COVID-19.

The COVID-19 pandemic has exacerbated global health inequities, rendering countries and individuals unable to look away as access to medical care and reliable health information remains unattainable to many around the globe (Bambra et. al., 2020; Burström, Tao, 2020; Chillag, Lee, 2020). In the United States, these inequities take the form of discriminatory healthcare policies and practices and lack of access to healthcare services, drastically impacting both life expectancy and quality of life, especially for communities of color. Health disparities greatly affect marginalized communities in the state of Virginia, where the Latinx community accounts for approximately 10% of the state's total population (Virginia Department of Health, 2021). At the beginning of the pandemic, Virginia's Latinx community had the highest mortality rates: at least five times the rate of the Caucasian community (Ibid). In southwest Virginia, a rural, primarily agricultural region, issues around healthcare are greatly impacted by social determinants of health and coupled with the digital divide, fostered the opportunity for mis- and dis-information to reproduce at an unmanageable speed, sowing fear and distrust around the health topics of vaccinations, viruses, and the COVID-19 pandemic (Chillag, Lee, 2020; Wilson, Wiysonge, 2020; Tagliabue, Galassi, and Mariani, 2020; Jaiswal, LoSchiavo, and Perlman, 2020).

Holistically addressing health inequities and the social determinants of health that shape them is an issue that requires the expertise of not just medical professionals but also information professionals, community organizations, and the communities that are most impacted. As the United Nations demonstrates in their *2030 Agenda for Sustainable Development*, addressing global inequities cannot be accomplished without mutual collaboration and reliance and the sharing of resources, information, and ideas to move solutions forward and equitably throughout the globe (United Nations, 2015). This paper will provide an overview of Virginia Tech's participation in the *Voces of a Pandemic* oral history project. The authors will detail their participation and describe strategies, practices, and methods utilized in overseeing a community- and health-focused oral history project. By adopting principles of community-based participatory research (CBPR), the authors will demonstrate how transdisciplinary partnerships, extending beyond academia, can successfully aid the Latinx community and how these strategies can be replicated and adapted to collaboratively combat health disparities in marginalized communities.

Voces of a Pandemic was a collaborative oral history project based out of the University of Texas at Austin's (UT Austin) Voces Oral History Center. UT Austin founded and directed the project, partnering with academic institutions and mutual aid organizations in documenting COVID-19 experiences of the Latinx community across the United States. Participating organizations signed memorandums of understanding (MOU) and agreed to conduct interviews; remain active in outreach and promotional efforts; and attend bi-monthly project management meetings. Each partner focused on a subcategory of the Latinx population and funded their own outreach and interview efforts. Electronic copies of the interviews were archived with the Voces Oral History Center and the interviews conducted by Virginia Tech were also added to the archives as part of the *Hokies@Home: Documenting COVID-19* archival project in Virginia Tech's Special Collections and University Archives (SCUA). Narrators signed disclosures and had the autonomy to conceal full names and identities using aliases if they felt unsafe or uncomfortable. Electronic copies of the interviews were made available to the public online and transcripts of said interviews can be requested from the Voces Oral History Center.

As a land-grant institution, Virginia Tech's responsibility to the citizens of the Commonwealth of Virginia was defined in the Morrill Act of 1862. Institutions of this type

were created to focus on agriculture, science, military science, and engineering and to provide education and service to all the citizens of the state where they were located. Despite the land-grant mission that is fiercely upheld across campus, Virginia Tech has historically had an ambivalent and occasionally contentious relationship with the surrounding communities, especially communities of color (Kennelly, 2018; Stephenson, 2010; Hundley, 2015). The University Libraries at Virginia Tech are one of the areas on campus that actively engage and support the surrounding communities, providing resources and dedicated employee positions that engage with community members and organizations, supporting the rich history and wisdom that the lived experience of communities bring to southwest Virginia (Virginia Tech, 2022).

Voces of a Pandemic at Virginia Tech was originally led by the Director of Public History, the University Libraries' Community Engagement & Research Librarian, and SCUA's Community Collections Archivist. Joining the *Voces* project was first proposed by Virginia Tech's Assistant Dean of Diversity, Equity & Inclusion to the Director of Public History as an opportunity to showcase the experiences of the Latinx community during the COVID-19 pandemic. Because the project was collaborative by nature and because the partner institutions retain ownership of project materials, SCUA was included to handle archival aspects of the project. The Community Collections Archivist had extensive experience working with communities on managing their archival collections, and had worked to actively uplift and highlight the experiences of marginalized communities in archives, both of which were vital to the management and flow of the project. Additionally, the Community Engagement & Research Librarian was included to advise on community engagement and inclusion of community-based research methods and practices. The transdisciplinary team also included the President of Casa Latina, the Co-chair and Program Coordinator of Casa Latina, the Fralin Biomedical Research Institute Health Sciences and Technology (FBRI HS&T) Library Studio Manager, and the Director of El Centro, Virginia Tech's Hispanic and Latinx Cultural and Community Center. The focus of *Voces* at Virginia Tech was on the food and employment security of the Latinx community during the COVID-19 pandemic, concentrating on undocumented members that worked in the food industry. The Director of El Centro was brought on first as a team member and then as a consultant as El Centro, the Latinx cultural hub on campus, provided unique insight to the project and could connect students with the Latinx community outside of Virginia Tech, offering the opportunity to grow those connections and provide students with an active learning experience.

The FBRI HS&T Library Studio Manager was invited to join as the project had potential to connect community and academic members located in Roanoke, Virginia with health information and as such, could lead to health-related initiatives in and outside of Virginia Tech. Project planning sessions began in late 2020 where it became evident that food and employment security could not be effectively confronted without consideration of socioeconomic factors, healthcare, health information access, and level of health literacy of the community. Additionally, members of the Latinx community have historically been underrepresented at Virginia Tech and the surrounding communities. As Virginia Tech (and specifically, the four departments associated with the *Voces* project) had a tenuous connection, at best, with the non-academic Latinx community around southwest Virginia, Casa Latina, the region's only mutual aid organization that supports the Latinx community with initiatives and resources, was invited to partner on the project (Casa Latina, 2022).

Inclusion, equitable treatment, and transparency- along with a collaborative approach and CBPR methods—drove the *Voces* at Virginia Tech project, from the selection of the team to

how the interviews were handled. Although CBPR does not have one set definition, it is a type of methodology that adheres to certain principles when working with communities during a research project (Israel et. al., 2003; Oetzel et. al., 2018). CBPR works with the understanding that community is an identity unto itself and as such, must be respected, valued, and positioned as an equal, active partner in research projects, and not merely as a subject of study (Ibid). Community organizations and/or individuals are included from the inception of research goals to the final close out of a research project: the needs, ideas, and guidance of the community are the momentum used to move the research project forward. CBPR positions members of the research team as equal; creating an environment that allows for co-learning and sharing of knowledge, experiences, and resources to ensure that a research project mutually benefits the community and the researchers (Ibid).

CBPR is meant to create social change and challenge the status quo of how research projects are created, run, and disseminated; reverting power back to the communities that are often most impacted by research projects, and who have the most lived experiences on said research topics. Once the research project is completed, all research findings are to be disseminated to the community partners as well as the research team. This is both for full inclusion of the community, as well to give ownership of research back to the community that is being studied. Lastly, the inclusion of community partners in a research project is meant to be an equitable and sustainable process. The partnership is meant to grow beyond a mere research project and strengthen into a long-term relationship between the two, providing mutual aid and shared knowledge, and reinforcing equitable power dynamics (Ibid). It is important to mention that although great efforts were made to incorporate CBPR methodology and practices into *Voces* at Virginia Tech, not every principle of CBPR could be included. Partner institutions were granted much autonomy for project management but some procedures relating to archival and interview processes had to be adhered to out of necessity and could not be modified due to the project constraints. Consent forms were provided by UT Austin and input was not allowed on the language nor was there the ability to change ownership of the interview data.

In the United States, the undocumented community remains one of the most marginalized, vulnerable, and at-risk communities, rendered invisible and unable to access critical educational, social, and health-related services due to their lack of documentation (Chang, 2019). The Latinx immigrant population is currently the fastest growing in the United States but has low health outcomes and low health literacy (Virginia Latino Advisory Board, 2017; Ibid, 2021; Ornelas, Yamanis, Ruiz, 2020). In rural southwest Virginia, where the population is predominantly Caucasian, the Latinx community is isolated; far from family, cultural and social norms, community support, and key health, educational, and information resources (Virginia Latino Advisory Board, 2021; Ornelas, Yamanis, Ruiz, 2020). As of 2016, 3% of the Virginia population was undocumented, making them a total of 27% of the immigrant community (American Immigration Council, 2020). All of these factors, along with the rapport that existed between Virginia Tech and the surrounding communities at the time, meant that the planning of the *Voces* project, especially how the community would be engaged with, needed to be both purposeful and mindful. Virginia Tech did not create the *Voces of a Pandemic* project nor retain ultimate decision-making regarding the project description and purpose, therefore CBPR methods were applied and adapted as much as possible into the management, procedures, and workflows of the research activity.

Casa Latina was asked to join the project with the understanding that they would be as equal of a stakeholder as Virginia Tech. As the only mutual aid organization in the area that

supports and empowers the Latinx community, it was crucial to the success of the project to acknowledge that Casa Latina had connections to a community that other stakeholders did not. It was vital to include their perspective, and acknowledge their power to construct a collaboration that was not transactional in nature but instead one of mutual aid and understanding. Throughout the project, Casa Latina had access to as much information and/or documentation as they needed and had tangible input in how the project was approached, and autonomy over their role and what resources they chose to share. Their needs and the needs of the community they represented were factored into every aspect of the project, from funding requests to how information resources were designed, shared, and disseminated, to how community members were approached for interviews.

The dynamic between an institution that wields as much power, money, and social capital as Virginia Tech does (and by default its departments and employees) and a community partner can be extremely inequitable, reinforce existing power structures, and oppress communities that historically have not had access to the same resources and advantages. As such, it was imperative that Casa Latina and the Latinx community preserve as much autonomy over their experiences and the expertise they chose to share for *Voces*, laying the groundwork for a reciprocal partnership and sharing of resources. In exchange for the skills, expertise, and social and cultural capital that Casa Latina contributed, Virginia Tech provided Spanish-speaking students that aided in community outreach; providing resources and information on the project, and disseminated videos and/or infographics that would most benefit Casa Latina and the Latinx community.

Given the sensitive nature of living as an undocumented immigrant in a rural and culturally isolated area, Casa Latina was the community's main point of contact as they had both access to and previously established connections with community members, enabling them to leverage their community knowledge to identify potential narrators. Additionally, narrators were encouraged to employ informal channels of access and connections to the rest of the community to identify other potential narrators. If narrators were amenable to being interviewed and understood the risks associated with the interview process, Casa Latina would either contact them directly or recommend different strategies for contact depending on the potential narrator's level of comfort. Early on in the outreach process, it became apparent that Casa Latina and community members had questions about the interview and *Voces* project. Virginia Tech created fliers in Spanish and English that were both informed and approved by Casa Latina and then disseminated by both organizations (with Casa Latina retaining editable copies for them to re-use as they saw fit). Virginia Tech also created a public-facing LibGuide in both languages that included contact information and a list of frequently asked questions. Casa Latina was listed as the point of contact to ensure trust in the project and maintain narrator comfort throughout the process. Casa Latina was included on all Virginia Tech project meetings, were trained on procedures and provided access to workflow documentation. If additional questions surfaced, from either Casa Latina or potential narrators, Casa Latina was encouraged to connect via email, telephone, and/or virtual meetings. Pre-interview meetings with narrators were also held in whichever language the narrator preferred to ensure a comfortable environment in which to engage and answer any lingering questions prior to the interview itself. Narrators were encouraged to review their interview upon completion and they were sent a recording that they could watch at their leisure. They were then able to elect to omit certain information or remove the interview from public access/viewing. Narrators also received a physical copy of a transcript from their interview, so as to retain a level of ownership over their story.

To create an environment supportive of trust and ethical practices, gift cards were provided for narrators as recompense for their time and sharing of their stories (Oetzel, et. al., 2017). The project team applied for Virginia Tech internal funding and received \$2,835 which included a stipend for student workers as well as discretionary funding in case any narrator had to travel to a physical interview site or to gain access to Wi-Fi. Employing the practice of active listening, Casa Latina's recommendations of using their space (over a public site) as an alternative for narrators who did not have access to a secure physical site to interview from were put into operation as part of project procedure. Narrators that had a previously established relationship with Casa Latina could also elect to use Casa Latina's physical location, where they would feel more at ease in a known environment, or could ask to be interviewed from the comfort of their own homes.

Voces at Virginia Tech concluded with fifteen interviews in both Spanish and English currently available online as a virtual exhibit as part of SCUA's online archival collections. Having afforded project stakeholders the opportunity to partner across disciplines on pandemic-focused oral histories, this innovative experience offered the opportunity for growth and learning. Managing a transdisciplinary project team in a bilingual, health-focused, oral history project brought new insight, as well as lessons that can be translated to other initiatives, projects, and services supporting the health and health information needs of marginalized communities.

Equitably and mindfully engaging with community groups can strain institutional resources and conflict with "traditional" Western research practices. Academic institutions have a long history of engaging with communities of color, especially Indigenous and Black communities, in predatory research practices that lead to transactional relationships, solely benefitting research teams and not the communities in need. Because of this and the vulnerability of the Latinx community, it was emphasized and reinforced that the *Voces* project would never come at the expense of the Latinx community or Casa Latina. As information professionals it is crucial to acknowledge that there is inherent privilege by the very nature of being employed by or associated with academic institutions of power. This privilege must be used not to speak over but to listen to and elevate the health needs of the very communities involved in research projects. Acknowledging the privilege and inherent power that academic institutions have is crucial when considering how resources should be shared and used during a community-collaborative project.

When working with marginalized communities of color, it is imperative to prioritize their needs and comfort over research output and traditional project management. Because of the vulnerability of undocumented Latinx workers in the community, many narrators throughout the outreach and interview process felt fear of retaliation, identification, and persecution and chose to hide their identity, employ an alias, or remove their interview altogether, even after having completed the transcription process and upload to the repository. Requests such as these were honored without retaliation or antagonism from the project team. Potential delays relating to narrator engagement, including comfort with the interview process and the information being shared were discussed and anticipated as a real possibility from the beginning of the project and were necessary to provide narrators ownership over their lived experiences and how they chose to share and engage with the project team.

For *Voces* at Virginia Tech, having both languages interwoven into the project was vital to foster trust, connection, and understanding of the narrators and their COVID-19 experiences. Not all members of the Latinx community were bilingual and half of the interviews (eight out

of the fifteen) were conducted in Spanish. To ensure that narrators were protected from potential exploitation, members of the project team had to have a firm understanding of both the Spanish and English language, i.e., writing, reading, speaking and also had to have lingual capacity to understand health-related and legal terminology. The most recent consent form that was required to be read by narrators, and signed before the interviews could take place, was not available in Spanish and had to be translated with support of team members, student workers, and Casa Latina.

Project planning and workflow are not a linear processes but are iterative; informed by stakeholder input and the capacities of the community and team members. Burnout, mental, physical, and emotional trauma during the COVID-19 pandemic is present in every country in the world. Additionally, the topics discussed during the interviews were of a sensitive nature and it is important to discuss, be aware and understanding of the emotional toll that listening to lived experiences can have both upon the narrators and those conducting the interviews. Taking time to recover or even step aside from the project needs to be factored into project management and contingency plans on how to manage such an event, including identifying institutional resources that can provide support are necessary.

Multi-institutional projects with various stakeholders that hold different areas of specialty can present challenges in communicating and understanding all parts of a project. Meetings to clarify the project definition and approach with engaging narrators was fundamental to maintaining forward momentum in this project. It is important to have a contingency plan for when partners withdraw or in case of unanticipated project shifts. When these unanticipated changes occur, it is important to maintain open lines of communication and inform all partners-- both to keep them apprised of project status and to also identify if any project plan shifting needs to occur.

After the completion of the *Voces* project, the relationship between Virginia Tech and Casa Latina was retained, leading to additional projects and collaborations. Recently, an Assistant Professor from the English Department at Virginia Tech received a grant for qualitative participatory action research with the Latinx community in Roanoke on the topic of COVID-19 vaccines and is collaborating with Casa Latina on the project. Given the role the University Libraries had during the *Voces* project, the research team has asked to partner with the University Libraries in support of both the interview and archival processes of the research project. To date, the University Libraries at Virginia Tech continue to partner with and support Casa Latina on informational videos for their social media channels, contributing to engagement with the Latinx community on social- and health-related initiatives. Resulting from community outreach that occurred during the *Voces* project, other relationships within Virginia Tech were developed. One of the narrators on the project was Dr. Carla Finkelstein, PhD, Associate Professor at FBRI, has partnered with the FBRI HS&T Library to develop and print 3D models of the COVID-19 virus. This project has helped support the academic, teaching, and research needs of the summer internship students in the Molecular Diagnostics Laboratory at FBRI.

Health inequities, including lack of access to quality healthcare, health-related services, and access to reliable health information (or lack thereof) are firmly rooted in the field of health sciences but medical professionals and the medical field cannot solve these issues alone. Information professionals can play a large part in facilitating access to information (including creating and disseminating health information), when connecting with trusted community partners. As demonstrated by the United Nations *2030 Agenda for Sustainable Development*,

addressing health inequities needs to include a multipronged approach, and must include not just medical professionals, but information professionals, community partners, and community members themselves, when addressing these issues. Too often communities of color are excluded from the very health-related conversations that most impact them and it is critical not just to include these communities but to understand that their lived experiences are just as valuable and can contribute just as much to resolving health inequities as academic and medical professionals and their research do. What originally appeared to be an oral history project on food and employment security in the Latinx community demonstrated that health inequities impact every facet of their lives and that mis- and dis-information play a large role in perpetuating these inequities. The information shared during these interviews provides crucial information on the health needs of the Latinx community and how academic institutions can and should do more in support of them. Information professionals can use their skills in innovative ways and go beyond merely providing services for a community and instead recognize the value of lived experiences of communities and seek to partner with them.

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Maternal Healthcare Information Requirements of First-time Mothers in Puducherry: A Survey

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Abstract:

Healthcare and health promotion are essential because it provides both direction and rationale in guiding & understanding strategic health behaviours, providing care & treatment, and many other related decisions. The concept of maternal health literacy is to determine the ability of women to have knowledge, access and use information that promotes healthy living among the mothers and children. Good healthcare information and the understanding of that information are crucial for the development of health literacy among mothers. This study used a survey method and questionnaire tool to know the requirements of healthcare information of first-time mothers (primigravidas) in Puducherry and the results are presented here. The study assessed the healthcare information needs of 100 first time pregnant women in Puducherry including their awareness and satisfaction with regard to services & programmes provided by the Department of Health and Family Welfare, and also identified the best methods/modes of delivering healthcare information to these mothers. This study also found the barriers in getting required healthcare information that affects pregnant women in Puducherry. This study aims to highlight the role of hospitals in providing maternal healthcare information to first-time mothers in Puducherry during their pregnancy period. Community Health Centres should act as promoting agents to deliver healthcare information to all the uninformed mothers. Dissemination of maternal healthcare information can be done by making it available in written, spoken or electronic form. The information could be available in books, pamphlets, audio, audiovisual or web-based forms.

Keywords: Healthcare, Healthcare Information needs, first-time mothers, modes of Healthcare Information delivery.

INTRODUCTION

The health of a mother and child depends on the healthcare she receives during her pregnancy, delivery, and during the first few weeks after delivery (postpartum period). The health and survival of the newborn is closely linked to the mother; *healthier the mother, healthier the baby*. To assure safe motherhood, all pregnant women should have access to maternal healthcare information and other related services they may need for a safe pregnancy and childbirth. Pregnancy is an essential

phase in a woman's life; it gives social importance to individuals, families, and society. Depending on whether the mother and fetus are healthy or experiencing issues, maternal and neonatal healthcare provides a variety of preventive measures and interventions.

Background

The utilization of maternal healthcare services is associated with improved maternal & child health. This study examined the requirements of maternal healthcare information services for first-time mothers in Puducherry. Healthcare in Pondicherry is delivered through a network of 8 major hospitals, 4 Community Health Centres (CHCs), 39 Primary Health Centres (PHCs), 77 Sub-Centres, 14 ESI Dispensaries, 17 Disease Specific Clinics and a 700 bedded Women & Children's Hospital. Safe motherhood begins with the concept of nutritious food and a healthy lifestyle, which continues with appropriate prenatal and postnatal care. Maternal health information is important to improve the knowledge of women and their partners, to increase the availability of evidence-based services, and improve the communication of health information in the UT, as children and mothers constitute an important and vulnerable segment of the society. The nutritional status of women plays a direct role in the development of the fetus and the health of the woman.

The Government of India has established the Department of Health & Family Welfare, which is responsible for people's health and family welfare in all states, especially for reproductive health; maternal health; paediatric health; rural health services; and information, education & communication.

Secondary healthcare is provided through Community Health Centres (CHCs), which offer advanced medical services to the rural population and dedicated clinics to assist in treating diabetes and hypertension. Government General Hospitals, which serve as the principal referral institution for primary and secondary healthcare in the Union Territory(UT) as well as neighbouring districts in Tamil Nadu, provide tertiary care treatment. Puducherry, Karaikal, Mahe, and Yanam are the centres for four General Hospitals in the UT, which provide specialist and super-speciality treatment to both inpatients and outpatients. The Department of Health and Family Welfare is also responsible for organizing, monitoring, and overseeing all of the state's health agencies and providing maternal healthcare, advocacy for safe delivery, and post-partum care.

Gestational age in pregnancy is counted from the first day of the last menstrual period (LMP) to nine months and 7 days from that date, which is 40 weeks. The first trimester lasts from week one to week twelve, the second trimester from week thirteen to week twenty-seven, and the third trimester from week twenty-eight until delivery. Once a woman is pregnant, she should see a midwife or a doctor on a regular basis, since early and frequent check-ups, also known as prenatal care/visits, are critical to ensure the health of both the mother and the baby. An obstetrician or a midwife will inspect the woman and baby during prenatal care and provide helpful information as well as answer any concerns they may have. Prenatal care entails more than just medical attention; it also involves teaching and counselling on topics such as diet, physical activity, vaccinations, and newborn care. Physical exams, blood pressure checks, blood tests (haemoglobin, blood sugar), urine tests, and serial weight measures are all part of prenatal care. Healthcare professionals may advise additional blood tests and ultrasound scans depending on the stage of the pregnancy. Pre-conception and prenatal care can help prevent difficulties and educate women on how to safeguard their babies and have a good pregnancy.

Need for the Study

It is very important to develop the maternal and child healthcare system in this country. The country should set up a healthcare system that will benefit the health, wellness and quality life of women,

children and families, not just control maternal and child mortality. This study will focus on first-time mothers, who are badly in need of healthcare information not only in Puducherry but all over India. By carrying out this study, we come to know the level of knowledge first-time mothers have with regard to pregnancy, maternal health, child care, and the required information so that the same could be made available to them. Thus, this study is also to examine the existing maternal healthcare information available.

Aim and Objectives

This study aims to ascertain the requirements of maternal healthcare information of first-time pregnant women in Puducherry. The specific objectives are: a) To assess the healthcare information needs of first-time mothers in Puducherry; b) To analyze their awareness and satisfaction with regard to health services & programs already in place; c) To assess the role of health professionals, government and NGOs in providing healthcare information; d) To identify the best modes of delivering healthcare information to first-time mothers; e) To identify the barriers/obstacles in accessing the healthcare information by first-time mothers

Scope and Limitations

The scope of this project is to cover all the required information and services for first-time mothers throughout all stages of pregnancy, including antenatal care, place of an antenatal visit, consults with health providers, facilities offered by hospitals, types of childbirth, diet intake, daily activities, breastfeeding, exercise, medical conditions, channels to deliver healthcare information, problems in getting healthcare information and expectations regarding Governmental and Non-Governmental Organizations. Due to the lack of adequate time, money and manpower, it is not possible to explore all available tools for accountability such as surveys, public hearings, social audits and community-based monitoring. Thus, this study focuses on the experiences of first-time mothers seeking maternity care information with a sample of 100 first-time mothers in Puducherry.

REVIEW OF LITERATURE

Healthcare information refers to a/the consumers' ability to comprehend medical information provided by caregivers or obtained over the Internet, and to utilize that knowledge to make informed decisions about their own course of treatment⁽¹⁾. As a result, healthcare data aids in the improvement of a patient's health, safety, and contentment. Antenatal education, which focuses on information about pregnancy, labour, and baby care skills, improves maternal health literacy⁽²⁾. It also gives women the chance to learn about the many treatment choices available to them, like pain management. Maternal health literacy educates women to make informed decisions throughout their pregnancy and delivery; as a result, it is a crucial and useful tool in providing adequate prenatal care and a healthy and successful pregnancy outcome. Maternity care is provided in the form of a bundle of services supplied through clinics and outreach initiatives. There are also weekly prenatal camps in addition to round-the-clock medical services. Pregnant women should attend prenatal care clinics, health education and nutritional workshops, as well as a nurse and midwife-led vaccination programmes. Increased utilization of basic maternity health services is required to improve maternal health, including antenatal care visits, iron and folic acid supplements, TT (Tetanus toxoid) and other vaccinations, institutional delivery, postnatal visits, and the adoption of family planning methods, among other things. Maternal and child healthcare are mostly provided through government-run PHCs and sub-centres in India's rural areas. In metropolitan regions, services are mostly provided by government hospitals, urban health centres (UHCs), NGOs' nursing homes, and different private-run hospitals, nursing homes, and maternity facilities. India has made considerable progress over the last two decades in this sector, which was further accelerated under the National Rural Health Mission, whose goal is to reduce maternal and child mortality⁽³⁾.

Previous research on factors that affect maternal healthcare consumption in South India has either been focused on one state or the whole area. Using data from a cross-sectional survey, Bhatia and Cleland (1995)⁽⁴⁾ investigated the variables related to the utilization of maternity healthcare in Karnataka's urban and rural districts. Govindasamy and Ramesh (1997)⁽⁵⁾ looked at the impact of maternal education on the use of maternal healthcare services in general in South India. Because of inexperience, women tend to pay more attention to their first pregnancy and are thus more inclined to seek contemporary treatment. Higher-parity women, on the other hand, are more inclined to ignore the need for maternity healthcare^(6,7,8). In the Indian cultural setting, a lady returns to her village to give birth, especially if it is her first pregnancy. Women who are educated are more likely to have better knowledge and information about contemporary medical treatments, as well as a better ability to detect certain illnesses⁽⁹⁾. Women will have more confidence and capability to access contemporary healthcare services for themselves and their children as education empowers them^(10,11,12,13,14). Here educational levels divided into four groups for analysis: illiterate, primary and middle, high school, and above. According to Sachs (2005)⁽¹⁵⁾, healthcare organizations who do not adopt a medical system will find themselves inefficient and ineffective in their workflow. With the use of healthcare information, it is possible to improve maternal health in a country.

METHODOLOGY

This study uses a survey method and questionnaire tool for collecting data. Overall, a questionnaire-based survey is both an effective and efficient way of getting relevant information needed for this study.

Questionnaire Design

The questionnaire contained both open-ended and closed-ended questions used to gather the opinions and views of first-time mothers that came for antenatal consultation at the Rajiv Gandhi Women and Children's Hospital in Puducherry, about maternal healthcare information. The questionnaire consisted of five sections – personal information, awareness and satisfaction, checkups and role of health professionals, best methods of delivering healthcare information and obstacles in getting the healthcare information.

According to the Puducherry City Census 2011 data⁽¹⁶⁾, the total population was 244,377, out of which the female population was 119,430. Since there is no provision to get all first-time mothers' records, the exact number is not known. Due to time constraints, in total, 100 first-time mothers were chosen as a sample and given questionnaires to fill up at PHCs, UHCs and Rajiv Gandhi Women and Children's Hospital, Puducherry. A convenient sampling technique was used in drawing the chosen sample for this project.

DATA ANALYSIS

The data provided by the respondents was processed using Microsoft Excel software. The findings have been organized and presented in the following sections.

Demographics of the sample

The first part of the questionnaire deals with the personal profile of the participants. Here, the information sought included age group, educational background, profession and work description. The majority of the respondents of this survey were between the 18 to 22 years age group, as shown in Table 1. The maximum age was 38 years and the minimum age was 18 years.

Table 1. Demographic Profile of the Sample

Age group	No. of Respondents	% of Respondents
18 to 22	36	36%

23 to 27	1	1%
28 to 32	16	16%
33 to 38	4	4%
39 and above	0	0%
Domicile		
Urban areas	60	60%
Rural areas	32	32%
Urban slums	8	8%
Educational qualification(s)		
Undergraduates	36	36%
Diplomas	8	8%
High School graduates	29	29%
Middle School graduates	24	24%
Primary School graduates	1	1%
Non-literates	2	2%

The majority (60%) of the first-time mothers surveyed came from urban areas. Over a third (36%) of the respondents are graduates and 53% have either completed their middle or a high school education and are capable of reading and writing. Over half (55%) of the first-time mothers surveyed were in their second trimester, 32% in their third trimester, and the remaining, in their first trimester of their pregnancy.

Healthcare Information Requirements of Mothers

A) Prenatal Care

Women nowadays have a lot of options when it comes to choosing doctors and hospitals to care for them during pregnancy, labour, and the postpartum period. When choosing a healthcare professional, one thinks about whether their pregnancy is low-risk or high-risk, how involved they want to be in decision-making and their feelings regarding "natural" deliveries and supplemental medicine. One can choose between an Obstetrician, a family/general medicine practitioner, an Auxiliary Nurse & Midwife (ANM), a Certified Nurse-Midwife (CNM) or a Certified Professional Midwife (CPM).

B) Mother's Choice of Place for Prenatal Visits

In Puducherry, the majority (87%) of the mothers normally consult an obstetrician for their prenatal care, as they have received many years of training and are also trained to handle complicated pregnancies and deliveries. Because each pregnancy is unique, prenatal check-ups are essential. The first visit will be beneficial in determining important dates and information. This is also an excellent time to provide a list of questions the mother and her partner will have regarding the pregnancy, prenatal care, and delivery possibilities, among other things. ANMs provide home visits for antenatal care and childcare, as well as to monitor the pregnancy's progress and cure minor ailments. Mothers are educated about childbirth, childcare, breastfeeding, immunizations, family spacing, and home economics. Of the total survey population, more than half (54%) of the mothers had prenatal visits at private hospitals, 35% at government hospitals and a small percentage at CHCs.

C) Frequency of Prenatal Visits

Prenatal Visits are recommended once every 4-6 weeks throughout the first 28 weeks of pregnancy, once every 2-4 weeks from 28 to 36 weeks of pregnancy, and weekly from 36 weeks till birth. Of the total, 74% of first-time mothers had undergone regular medical check-ups and consulted health providers for their prenatal visits. With regards to the intervals of consulting health providers for their medical check-ups, it is found that 82% of mothers consulted once a month, 3% every week, 9% consulted twice a month and 6% consulted once in a trimester. Regular check-ups and

consultations are taken to monitor the health of the mother and their baby. Monitoring includes: i) Good nutrition and health habits before and during pregnancy; ii) Frequent prenatal exams; and iii) Routine ultrasounds to detect any fetal anomalies. In addition to the above, routine screening includes: a) Blood pressure; b) Rh incompatibilities (Rh and ABO); c) Diabetes; d) Genetic disorders; e) Immunity against German measles (rubella); f) Sexually transmitted infections; g) Proteinuria; h) Weight gain; i) Fetal heart rate; and j) Fundal height.

D) Preference of Doctors by Age and Gender

Table 2. Health Provider's age and gender preference

Age & Gender of the Health Provider	No. of respondents	% of respondents
Female doctor above 35 years	75	75%
Female doctor below 35 years	19	19%
Male doctor above 35 years	0	0%
Male below 35 years	0	0%
Not concerned with age and gender	16	16%

Table 2 shows the preference for age and gender for doctors, by mothers, for their consultations. Of the total, three fourths (75%) of the mothers preferred consulting female doctors above 35 years of age and having a reputed practice and better experience. Since it is their first pregnancy, they take extra precautions in all aspects. Gender preference has various elements that might affect a person's comfort level and lead to judgments about a physician's care or competency when choosing a doctor, including culture, religion, and prior encounters with a male or female healthcare practitioner⁽¹⁷⁾. Knowing that certain groups of patients are more likely to have significant gender preferences in choosing doctors since they may need to discuss sensitive/personal issues with them; yet, research into human desires and concerns will always have limitations^(18,19).

E) Emergency consultations for Mothers

In case of an emergency, the majority (82%) of first-time mothers prefer to consult at a hospital, over a sixth (15%) prefer to go to clinics and a small percentage (3%) prefer to go to health centres. The "3 delays" - the delay in deciding to seek care, the delay in contacting healthcare providers on time, and the delay in receiving effective treatment - are all factors in maternal mortality. The first is the mother's, family's, or community's failure to recognize a life-threatening ailment. The majority of deaths occur during labour or within the first 24 hours after delivery. It is found that 83% of mothers are residents of Puducherry or stay in and around Puducherry, within a radius of 1-10 km from hospitals.

F) Mother's Preference for Place of Delivery and distance of Hospitals

In Puducherry, most (92%) women prefer to deliver at Government hospitals, because these hospitals are fairly large, have extensive technical facilities, treat free of charge and counsel or motivate mothers to have a normal delivery. The second is a delay getting to a healthcare institution, which might be caused by poor road conditions, a lack of transportation, or distance. Many communities lack access to paved roads, and many households lack access to automobiles. Hence, public transportation is the main transportation method for many people in rural areas, which means that it may take hours to reach a healthcare facility. Hence women with life-threatening conditions often do not reach the facility in time. It is found that a nearly fifth (18%) of the mothers rely on public transport to reach the health centres or hospitals.

Table 3. Distance from home to hospital & Mode of transport

Hospital distance (in Km)	No. of Respondents	% of Respondents
----------------------------------	---------------------------	-------------------------

1-10	83	83%
11-20	14	14%
21-30	2	2%
31 & above	1	1%
Mode of transportation		
Walking	7	7%
Two-wheeler	59	59%
Four-wheeler	16	16%
Public transport	18	18%

The third delay happens at the healthcare institution; women are frequently given insufficient or ineffective treatment when they arrive. The equipment and services required to provide essential treatment for bleeding, infection, or eclampsia may be unavailable in resource-poor countries with shaky healthcare infrastructure. Maternal mortality is caused by treatment omissions, inappropriate treatment, and a lack of critical medications and facilities.

Table 4. Healthcare Information Requirements

Health information needed during pregnancy	No. of respondents	% of respondents
Dietary information	63	63%
Medical information	56	56%
Prenatal & Postnatal care	18	18%
Hospital information	20	20%
Doctors information	18	18%

Note: Respondents are allowed to tick more than one option, so the total percentage is more than 100

G) Dietary advice during pregnancy

It is essential to consume a healthy and balanced diet throughout the pregnancy period. Weight gain that is either too little or too much might raise the chance of complications later in the pregnancy. According to WHO, a weight increase of 10-14 kg is necessary during pregnancy for women with a normal pre-pregnancy weight^(20,21,22). Most of the meals should be starch-based and protein-rich. 68% of first-time mothers were advised by their healthcare providers on dietary intake. Of the total, 63% of the mothers require information on diet, 56% of mothers require medical information during the pregnancy; a small (18%) percentage of mothers have mentioned that they need information regarding the growth of the baby and baby care; a fifth (20%) of them need information about reputed hospitals, and doctors (18%), to consult in case of any emergency. This information should also be made available to them.

H) Mother's knowledge on Nutrition and Exercise

The food the mother eats should provide all the nutrients for the growth of the baby. It is found that more than half (56%) of first-time mothers have good knowledge on food & nutrition needed during pregnancy. However, 42% of the mothers are not sure about the nutrition needed or know what food & nutrition is, and a small (2%) percentage of them have no idea on what to eat. Therefore, there is a need to educate all mothers on dietary matters to prevent any dietary deficiencies and their related problems.

It is found that with regards to daily activities, over half (55%) of the mothers are mildly active during their pregnancy, over a third (37%) are moderately active, a small percentage (3%) of them is very active and another 5% of them do not have any activities. Exercise is necessary during pregnancy, to strengthen the body. Depending upon the body's anatomy and lifestyle habits of the

person, the type and amount of exercise may vary. 72% of mothers also preferred selecting maternity wear which was comfortable for them.

I) Mothers thoughts/feelings about Pregnancy

It is found that 66% of mothers feel that their appetite is good. Hormonal changes in pregnancy can affect the brain chemistry; hence women are at risk of developing anxiety and postpartum depression, during or after pregnancy; or postpartum psychosis, a few weeks to a few months after the delivery⁽²³⁾.

Pregnancy alters their lives dramatically, especially if it is their first child. Some people adjust to these changes quickly, while others struggle. Even though they are happy about having a baby, it is typical for pregnant women to also feel vulnerable and frightened.

Table 5. Personal feelings about Pregnancy

Feelings of Pregnant mother	No. of Respondents	% of Respondents
Happy	39	39%
Tired	55	55%
Satisfactory	16	16%
Depressed	0	0%
Sad	2	2%
Stressed	6	6%
Angry	1	1%

Note: Respondents are allowed to tick more than one option so the total percentage is more than 100

J) Mother's Supportive Healthcare

Care during pregnancy is very important to both mother and baby. To help make sure that their baby will be as healthy as possible, they should follow some simple guidelines and consult with their doctors from time-to-time. There are many more things a pregnant woman will have to be aware of during her pregnancy. It is important that the mother feels happy and satisfied with the care and protection she receives from her partner, family and relatives.

Awareness about Healthcare Information/Education

Breastfeeding

Breastfeeding is the most important method of providing nutrition to young infants, with breast milk providing all the nutrients they need for healthy growth and development, for 4-6 months from birth. Virtually all mothers can breastfeed, provided they have proper guidance, information and the support of their family. It is found that 99% of mothers have adequate knowledge about breastfeeding to their baby. Breastfeeding, child survival, mother's health, and fertility all have mutually reinforcing impacts, according to both scientific data and programme experience⁽²⁴⁾. Maternal and child health services, as well as nutrition and family planning programmes, are excellent partners in promoting and safeguarding the health and well-being of the entire family. Breastfeeding causes the mother's fertility to return at a later time, resulting in longer childbirth intervals⁽²⁵⁾. Birth spacing allows for the continuance of breastfeeding for the benefit of the child, as well as various additional benefits for both mother and child⁽²⁶⁾. Better nutrition boosts newborn and child survival rates, which leads to longer birth intervals.

Evaluation of Healthcare Information Provided by Government/NGO's

A) Medical care by Government/NGO

Of the total sample, 55% of the mothers received only medical care or advice from the government or by NGOs, indicating there is an improvement to be made in this area. It is found that 71% of the mothers have always received advice on medicines in all trimesters, but over a tenth (13%) of them have not received any such advice. It is found that the people living in rural areas are missing these

services, so the government should provide such services in rural areas or transport the mothers to Puducherry to receive such services.

B) Weeks of Gestation and Expected problems & their incidence

Table 6. Weeks of Gestation and Expected problems

Weeks of pregnancy	No. of Respondents	% of Respondents
0-8	2	2%
9-12	8	8%
13-20	3	3%
21-28	1	1%
29-34	1	1%
35+	0	0%
Expected problems		
Diabetes	3	3%
Hypertension	5	5%
Infection	1	1%
Hemorrhage	1	1%
Anemia	1	1%
Hypothyroidism	4	4%

From table 6, it can be seen that 8% of first-time mothers had pregnancy-related problems between their 9-12th week of gestation, including gestational diabetes, hypertension, infection, haemorrhage, anaemia and hypothyroidism.

Best Channels to Deliver Healthcare Information:

Table 7. Best channels to deliver healthcare information

Channel to deliver healthcare information	No. of Respondents	% of Respondents
Hospitals	49	49%
Newspapers	10	10%
PHC	14	14%
Internet	24	24%
TV	37	37%
Mobile	3	3%
Radio	1	1%
Posters	4	4%
Midwives	12	12%
Magazines	11	11%

Note: Respondents are allowed to tick more than one option so the total percentage is more than 100

From table 7, it can be seen that 49% of mothers feel that hospitals are the best channels to deliver healthcare information when they come for their checkups and the least preferred source is the radio, with the TV being the next best channel.

Barriers in Accessing Health Information

Table 8. Barriers in accessing health information

Barriers	No. of Respondents	% of Respondents
Lack of clarity	76	76%
Diffusive response	5	5%

Lack of flexibility towards others	4	4%
Illiteracy	7	7%
Others	1	1%
No barriers	7	7%

It is found that the greatest barrier was that 76% of mothers do not have clarity with regard to healthcare information, indicating that they have faced problems in getting the required healthcare information. Of the total, 75% of mothers indicated that hospital libraries should take the lead in arranging lectures, providing training and classes to enhance their knowledge on maternity health, and 69% indicated that hospital libraries should arrange educational films. A small percentage of mothers would like maternity programs and other types of training to be provided by hospital libraries.

Sources to access Healthcare Information

Table 9. Sources to access Healthcare information

Sources of information	No. of Respondents	% of Respondents
Primary Health Centres	12	12%
Doctors	46	46%
Hospitals	22	22%
Mothers	63	63%
Mothers in law	63	63%
Other family members	51	51%
Library	7	7%
Internet	36	36%
Others	2	2%

Note: Respondents are allowed to tick more than one option so the total percentage is more than 100

From table 9, it is found that 95% of first-time mothers indicated that healthcare information is necessary for a healthy life, out of which 63% of mothers approached their mothers and mothers-in-law to get essential healthcare information during their pregnancy. About 51% of these mothers approached other family members and 46% approached their doctors. When first-time mothers undergo labour, they will be in pain & discomfort and go through a lot of emotions, so they look for someone close to them and who also has prior experience. For any woman, their mother comes first and then their mother-in-law. It is found that grandmothers⁽²⁷⁾, mothers^(28,29,30) and mothers-in-law play an important role in providing and accessing healthcare facilities and providers^(31,32) to first-time mothers. Studies in different countries and cultures around the world have found how intra-familial decision-making authority affects a woman's capacity to obtain and use maternal healthcare, notably in India^(33,34), Pakistan^(35,36), and some African countries like Ghana⁽³⁷⁾. Women's lack of decision-making and autonomy, as a result of gender inequality, economic marginalization, and community decision-making & social authority, implies that access to maternity healthcare services is not regarded as important.

Satisfaction of Services Rendered:

It is found that 81% of mothers' state that the Department of Health and Family Welfare provides very good services, 16% stated as fair services, and a small percentage (3%) stated as poor services. Regarding the services provided by the Health Centres in Puducherry, 82% stated that PHCs, and 79% stated that CHCs, provide good services.

DISCUSSION

DISCUSSION

The accountability for maternal healthcare services is investigated in this study using a human rights framework. It lays out several concrete initiatives that the Pondicherry government should incorporate to better associate accountability into maternal healthcare programmes and ensure that they are implemented throughout the healthcare system. One of the important issues to be considered by these mothers is their place of delivery, which in India is normally at their mother's hometown because all pregnant women have the choice, and with the role of technology as a facilitator, allowing that choice to be exercised safely. There are mixed opinions on their method of delivery and monitoring by professionals among these women. Some respondents believe that pregnancy is always risky and that all pregnant women should give birth in a hospital. Others indicated that for low-risk women and when overseen by qualified experts, home birth might be safe.

In this case, all pregnant women should be provided with the required information to manage their life in pregnancy. In this regard, many studies have been conducted by several researchers to assess the information needs of pregnant women. Their information needs should be identified and taken into consideration while planning educational programs for this group of women^(38,39,40).

Based on the survey, it was found that the maternal health literacy of first-time mothers of Puducherry is low for those mothers who reside in the rural and urban slum areas. First-time mothers also lack basic knowledge and understanding of managing pregnancy. It was found from the survey, that a majority of the families in Puducherry were earning an annual income below 1 lakh. The main barriers to accessing health information were a lack of both clarity and education. Hospital libraries and information centres are the best channels for delivering healthcare information in Puducherry.

Unplanned pregnancy leads to inadequate prenatal care, so women should be educated on having a planned pregnancy. In Puducherry, 51% of couples had a planned pregnancy and most of the respondents were happy for their pregnancy. About 8% of mothers had a previous miscarriage or abortion. The majority of the first-time mothers went for an antenatal check during their 2nd or 3rd month of pregnancy, for which the majority have consulted an obstetrician.

Consulting healthcare providers for regular health checkups help to determine the growth and health of the mother and baby. Dietary advice should be given to the mothers to have nutritious food and get the required protein, vitamins, minerals, calcium and other supplements. The mothers should also be prescribed folic acid and iron tablets. Medical care, information, advice and other services are important for a healthy pregnancy and can be delivered by the government or by NGO's. Regular checkups, immunization, ultrasound scanning should also be done to test if there are any abnormalities in the pregnancy. The health advisors can also give advice on the dos and don'ts during pregnancy.

Delivering health information is very important for medical treatment. Awareness, tips, preventive measures, etc. can be disseminated so that women can consult health providers before having serious complications. Hospitals, newspapers, PHCs, internet, TV, educational films, mobiles, posters, midwives and magazines are said to be the best channels to deliver maternal health information. The availability and significance of maternal healthcare services can be explored via electronic media. The media might also be utilized to raise social awareness and modify public perceptions of modern medical care.

Lack of clarity, dysfunctional responses, lack of flexibility towards others and illiteracy are the obstacles that prevent access to required healthcare information⁽⁴¹⁾. Family situations, economic problems, lack of understanding of technical words and restrictions are other barriers⁽⁴²⁾.

The majority of mothers preferred seeking information from their mothers and mothers-in-law or their friends. During pregnancy, the information which a mother most seeks is on dietary information, medical checkups, prenatal and postnatal care and information about hospitals & doctors. In addition, the mothers suggested access to information on baby's growth, baby care, breastfeeding, and postnatal care.

CONCLUSION

The study focuses on the importance of maternal healthcare information and its utilization by first-time mothers. It is found that first-time mothers in rural areas have attributed lack of availability and accessibility of maternal healthcare information to poor health, timely seeking of medical treatment and complicated delivery. First-time mothers are always excited to know how their baby grows and anxious to know what can be done to have a healthy baby. Hospitals can help these mothers by giving some brief information on how a safe pregnancy should be managed. They should also get an opportunity to interact and clarify their doubts from physicians. From the study, it is understood that several reasons have been put forward to understand why maternal healthcare services are essential. It is found that women's literacy is an important predictor for utilizing maternal healthcare information. Women living in urban and urban slum areas are more likely to seek maternal healthcare services than women from rural areas. Books, pamphlets, audio, audiovisual, and web-based forms can all be used to provide maternal healthcare information.

According to the findings of a recent study, educational and psychosocial interventions are needed to help pregnant women and their families physically and mentally⁽⁴³⁾. By conducting a similar study on a larger scale with first-time mothers all over the country covering south, north, east and west regions and all cultures, religions, communities, etc., it will give the understanding to formulate national policies at the country level. Also, the impact of a mother's independent variables on their dependent variables may be studied to find out many new things which we cannot identify in general studies or surveys. Based on the results, healthcare information kits may be prepared, and again studied to discover their impact on these mothers and find out the best channels of delivery to all mothers.

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Developing Best Practices for Searching During Public Health Emergencies

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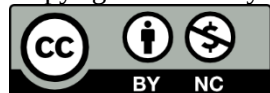
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Abstract:

The Librarian Reserve Corps (LRC), an international volunteer network of over 140 health sciences librarians from 14 countries, was formed in March 2020 to respond to the information needs of the Global Outbreak Alert and Response Network (GOARN) during the COVID-19 pandemic. One key project area for the LRC, in coordination with the World Health Organization Library, was the facilitation of discussions among creators of COVID-19 literature collections, databases, and search portals, the main goal being the coordination of expertise to curate the best evidence during the pandemic. Discussants identified the need for best practices for searching during public health emergencies. LRC volunteers responded to that need with a qualitative research project on best practices for searching during public health emergencies. This paper will describe the methods and tools used to develop the statement; the preliminary findings from the qualitative research; lessons learned and future directions for this project.

Keywords: Systematic Reviews, Methodology, Qualitative Research, International Collaboration, Evidence Synthesis

Introduction

Evidence-informed decisions are essential to effective public health emergency response. During the COVID-19 pandemic, librarians and information professionals, who have been called upon to find research to help support these decisions, encountered a rapid evolution of information needs; the proliferation of new resources; and the rapid publication of new evidence. Additionally, professionals needed to develop new and innovative ways to find publication types (e.g., preprints) not typically used in evidence synthesis and reference work in the biomedical field. Guidance for developing and reporting searches outside of emergency settings was too prescriptive to be adapted to the rapidly evolving nature of the pandemic. New and innovative approaches to searching the evidence and reporting the findings was needed to accommodate the fluidity and the rapidly-changing nature of the pandemic.

In response, the Librarian Reserve Corps (LRC), an international volunteer network of over 140 medical and public health librarians from 14 different countries, convened an expert panel to develop best practices for searching for evidence in a public health emergency. The LRC convened a series of discussions on literature searching challenges with evidence synthesis researchers, information professionals, and COVID-19 database creators. From those meetings, and with support from the literature, emerged best practice recommendations for finding evidence during public health emergencies. This paper is not the best practices paper but describes the process, methods, etc. of developing them.

Methods

Research Design

In developing the best practice recommendations, the authors used qualitative research methods, including expert panel discussions and written responses from the same panel. The best practices statement was informed by research on publication trends and literature searching during the pandemic and other public health emergencies.

Expert Panel Discussions

On November 20, 2020, 15 information professionals, database creators and evidence synthesists, attended a virtual meeting with the authors to discuss the scope of the proposed recommendations and identify key organizations to be involved in their development. After that initial meeting, the authors developed a protocol inspired by the Delphi method and a preliminary project timeline and created shared folders and password-protected webpages to support the project. The authors identified further experts with experience in literature searching, knowledge synthesis and maintaining specialized COVID-19 databases. The authors also attended meetings with COVID-END (December 2020) and the WHO Evidence Collaborative on COVID-19 (May 2021), at which additional experts and peer reviewers were recruited.

From the minutes of these meetings, meta-research on COVID-19 publication trends, research describing literature searching during previous public health emergencies and guidance for searching in non-emergency situations, the authors developed six core elements to be addressed in the best practices statement: (1) Core Resources; (2) Search Strategies; (3) Publication Types; (4) Transparency and Reproducibility; (5) Collaboration; and (6) Conducting Research.

The experts from the panel were surveyed (Wilson et. al. 2021a) on the core elements from December 2020 to February 2021 to ensure a common understanding of the statement scope and the specific elements (Brody et al. 2021). There were ten respondents, including academic librarians, government librarians, database creators, and clinical information specialists.

On February 24, 2021, the authors emailed each member of the expert panel guiding questions (Wilson et. al. 2021b) to elaborate and explore each element (Brody et al. 2021). The guiding questions reflected COVID-19 literature searching challenges as well as themes from the literature. Responses from nine experts were received at the beginning of March 2021. The authors reviewed the responses for common themes, areas of disagreement, and points for further clarification and elaboration. The LRC volunteers developed discussion questions to clarify points that were only vaguely described or around which experts shared conflicting viewpoints.

A series of six virtual meetings (one for each element) were scheduled with the authors and the expert panelists between April and June 2021 to discuss these follow-up questions (Brody et. al. 2021). The expert panelists were provided the follow-up questions prior to each meeting; those unable to attend the virtual meetings were invited to submit their responses via email. Five to eleven participants attended the virtual meetings.

Meetings were recorded with the expert panel's knowledge and consent and meeting minutes were transcribed by the authors. All meeting materials, including minutes and discussion questions, were posted on a password-protected webpage for all volunteers and expert panelists to review.

Writing the Statement

The writing team for the best practices statement included two members of the LRC executive team, five LRC volunteers and two members of the expert panel. Each element contains recommendations and real-life examples of how these recommendations are practiced in the professional world. The format was modeled after the PRISMA 2020 explanation and elaboration document and PRISMA-S (Rethlefsen et al. 2021; O'Dea et al. 2021; Page et al. 2021). The statement was distributed to the panel of experts for peer-review and feedback in November 2021 and their suggestions were incorporated into the statement between December 2021 and January 2022.

Tools/Resources

The development of the best practices statement involved the use of a number of virtual collaboration tools. The authors used traditional digital library products to share information and to manage the project. Springshare, LLC provided the LRC with access to LibGuides and LibWizard. Project materials for all participants were posted on the password-protected project LibGuide (Springshare 2021) to allow access. LibWizard (Springshare 2021) was used to survey experts on the core elements, collect recommended references and expert nominations, gather feedback on the final draft, and collect author information for publication. Meetings were conducted using the video conferencing platform Webex (Webex by Cisco 2021), which allowed meetings to be recorded for later compilation of minutes.

Participants submitted written responses to the guiding questions using Box (Box 2021), a cloud-based content management system. Box was chosen to allow access for hospital librarians and others for whom the use of Google Drive was restricted. Box was again used for drafting the statement and the accompanying white paper. Feedback on these drafts was collected from reviewers using LibWizard. References for the paper were organized using the free, open-source reference management software Zotero (Corporation for Digital Scholarship 2021), which includes an integration with word processing software to simplify insertion of citations. Shared materials were posted to Open Science Framework (OSF) in July 2021 (Brody et al. 2021).

Skills

The skills required to successfully undertake this project combined traditional librarian roles in literature searching with expertise in project management. Expert searching is a key skill of medical librarians, who have the necessary expertise to find and evaluate relevant evidence on public health emergencies (Friesen et al. 2015).

Most of the team members are also academic librarians, a group with a strong dedication to research and a particular interest in collaborative approaches (Hacker et al. 2020). This background proved essential in reviewing the literature on current and previous emergency responses in order to identify trends in research reporting and dissemination, and especially in applying findings from this review to the domain of public health.

Management of the statement development process also required skills outside of search expertise. The project involved development of guiding questions, summarizing responses and creating discussion points to elucidate further clarification on recommendations, and then using notes from the discussion series to develop the recommendations. This process drew heavily on these qualitative research skills, as well as meeting facilitation skills to support a consensus-building process that moved from abstract elements to concrete recommendations.

In addition, given the scope of the project and the number of participants, the statement development called upon project management and planning as well as strong communication skills. These soft skills are not specific to librarianship but are key to supporting the successful conduct of research projects at this scale.

Conducting Research During a Public Health Emergency

Conducting research during a public health emergency such as a global pandemic offers unique affordances as well as challenges to the research process. Convening a multinational expert panel was significantly assisted by the widespread use of virtual meetings driven by public health restrictions. It facilitated continued work on the statement even while many workplaces were shuttered and supported a unique blending of participants from different contexts. However, this digital participation also contributed to the problem of Zoom fatigue and information overload (Callaway 2021). It also limited the potential participation of those without reliable electricity and access to the Internet, which may reduce the utility of recommendations in lower-resourced contexts.

Despite the convenience offered by videoconferencing meetings and other virtual collaboration tools, conducting a large-scale project during a public health emergency

imposed significant demands on time and energy, on top of work already being done to respond directly to information needs prompted by the pandemic. In addition to this project, volunteers from the LRC were engaged in other projects (Berg et al. 2021). In addition, participants were engaged in response efforts at their local institutions. This is on top of usual work and often coupled with reductions in workforce, diminished wellness and/or increased family responsibilities, resulting in significant limitations on research capacity (Rethlefsen et al. 2021).

Flexibility was preferred over prescribed research methodologies in order to respond efficiently to the rapidly evolving situation. Surveys, discussions, and writing were completed in less than 12 months. Consequently, the statement should be reviewed following the end of the current Public Health Emergency of International Concern and after the next health emergency.

Preliminary Results

The statement aims to complement existing guidance to support evidence-based practice in emergency responses (Higgins 2019; Park et al. 2021). Best practices were developed using a semi-structured qualitative method combining professional expertise with evidence from the literature. Though the recommendations and examples arose from the COVID-19 pandemic, the underlying principles should remain relevant in future public health emergencies. The use of the six elements to group recommendations is intended to support high-quality, efficient searching to respond to an evolving public health situation.

Core resources include both traditional resources for information (such as Medline) as well as new and emerging resources – for example, specialized collections for COVID-19 such as LitCovid (Rubin et al. 2021). Recommendations for this element consider which and how many resources to search; how to evaluate databases, existing and new; and when / how frequently to re-evaluate resources. These recommendations also outline considerations for deciding on resource selection, which include balancing urgency and comprehensiveness of search, and the availability of personnel and financial resources.

Appropriate search strategy development allows retrieval of the best evidence. Recommendations for this element consider how to design, share and evaluate search strategies; the consequences of changing terminology, the evolution of subject headings, and automatic term mappings; and whether to use filters. The element did not address frequency of updating and re-running search strategies for living reviews or database maintenance.

Consideration of publication type allows non-peer-reviewed literature to be appropriately used and contextualized. Recommendations for this element consider how to monitor publication trends; which publication types to include in search and in what contexts; how to locate and distinguish non-peer-reviewed publication types; and how to monitor study results over time.

Transparent documentation of searches allows for the strategies to be trusted and reused. In the context of a public health emergency, researchers need to know the sources used and how they have been searched, have confidence that appropriate sources and strategies have been used, ensure that no bias has been introduced, and rerun searches to update or validate a search. Recommendations for this element consider how to share information while maintaining the privacy of search requesters, as well as whether and how established

reporting guidelines like PRISMA-S (Higgins 2019) and MECIR (Park et al. 2021) need to be adapted for emergency contexts.

Collaboration among information professionals, researchers, and decision makers can reduce duplication of effort while improving efficiency in information seeking. This approach avoids the need to reinvent the wheel in each jurisdiction and allows for best practices to be shared broadly, supporting evidence-based responses to current and future public health crises. Recommendations for this element consider how to rapidly share search strategies and review protocols; participation of information professionals in response efforts; how to foster collaboration among information professionals and creators of emergency-specific databases and collections; and how to foster collaboration across subject domains.

Information science research can support a more efficient response to emergencies. Recommendations for this element consider how to design, conduct, participate in and disseminate research. Specific types of information research addressed include the validation of search strategies, the evaluation of databases, and the assessment of comprehensiveness of search results and/or the utility of artificial intelligence and machine learning tools.

The recommendations are based on five principles to guide searching during public health emergencies: timeliness, openness, balance, preparedness, and responsiveness. Searchers need to consider the trade-offs of conducting more rapid searches to meet the urgent needs of decision makers, document strategies for transparency, use a combination of new and traditional tools, prepare for future emergencies, and maintain awareness to respond to current emergencies.

The draft statement and accompanying explanation and elaboration was shared with expert participants and reviewers in November 2021, with feedback to be incorporated into the final manuscript. The final version of the statement was redistributed to and approved by authors, expert panellists, and reviewers. The manuscript was submitted to an open access, PubMed-indexed journal that permits author archiving and preprints.

Future Directions / Trends

The statement will provide recommendations for best practices for searching in the current COVID-19 information landscape. There is some anticipation that these practices will evolve during the current public health emergency and future emergencies. Additionally, while changes in technologies, opportunities, and other norms are expected to evolve, the underlying principles contained in the statement will remain relevant even as technologies and tools continue to evolve.

The statement also calls for additional research, training, and advocacy efforts. Research should continue to be conducted during and between emergencies to support librarians and information professionals. Some lines of research may include 1) qualitative research pertaining to licensing, citing, and reusing search strategies or 2) creation and validation of search filters. Additionally, educators can utilize the best practices in the design of curricula to support capacity-building. Recognizing that information professionals and infrastructure are inadequately resources, the statement also calls for advocacy to support professionals, platforms, and other tools necessary in response efforts.

The current team has no plans to revise the statement, acknowledging the challenges faced and the demands on time, energy, and resources to complete this work. The statement should be reviewed after the official end of the current Public Health Emergency of International Concern as well as after the end of the next global health emergency, and/or as changes in information sharing policies and practices necessitate updates to the recommendations. Future iterations should involve consultation with a broader community of searchers, researchers, and decision makers. A complementary statement of best practices for databases and collections should be developed.

Lessons Learned

Creating a best practices statement of this kind, and during an emergency situation, requires balancing patience with urgency. Developing a good product necessarily takes time, and a quick response is important lest it be out of date by the time it is prepared. Adhering to a clear timeline helps to ensure work proceeds, but, given the dynamic nature of the public health situation, flexibility is sometimes required to account for the workload being placed on collaborators.

Motivation is also a key factor, and one significantly impacted by the demands of the public health situation. Burnout among librarians is common given increasing workloads and requires mitigation (Anderson et al. 2021). It is also important for collaborators to balance serving the professional librarian community with their local communities and responsibilities.

In order to address these issues, collaboration is vital. Distributing work among project participants ensures that it can be done in a timely manner without overburdening any one individual. Just as searchers need not recreate the wheel when an information resource already exists to serve a particular need, a researcher need not attempt to do all of the work on a project. Asking for help is an important skill in managing workload. Additionally, asking for help with content – in this case, from expert participants and reviewers – brings in outside perspectives and improves the validity and applicability of the final product. Evidence-based information practice remains as important as ever, and so too are communities of practice and research relationships for informal and formal information sharing.

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Systematic Reviews and Meta-Analyses from Sub-Saharan Africa: Library and Information Professionals' Contributions to National Output

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Abstract:

This paper assesses the contributions of library and information professionals to the systematic reviews and meta-analysis with at least an author from a Sub-Saharan African country. Systematic review and meta-analysis publications' data with at least an author from an institution in Sub-Saharan African country and was published between 2014 and 2019 was collected from MEDLINE using the PUBMED search interface. Bibliometric analysis of the collected data shows that South Africa, Ethiopia, Nigeria, Kenya and Cameroon were the most productive Sub-Saharan African countries in evidence-based biomedical research. Out of the 2439 articles, 474 referenced the contribution of library and information professionals. Most of the library and information professionals contributing to evidence-based research were from UK, USA, Australia, The Netherlands, and Canada. Only 33% of the library and information professionals with specified addresses were from institutions in Sub-Saharan Africa. Library and information professionals from only seven (South Africa, Ethiopia, Nigeria, Kenya, Uganda, Tanzania, and Mozambique) of the 46 Sub-Saharan African countries contributed to national output on evidence-based biomedical research. The library and information professionals' contributions were small; Uganda (8.28%) and South Africa (6.08%) were the only countries that contributed to more than five per cent of national output on evidence-based biomedical research. The study revealed that library and information professionals from Sub-Saharan Africa were more likely to be consulted in studies with a Sub-

Saharan African first author and in studies where all authors were from the Sub-Saharan African region, than studies with first authors from outside the region. The strong influence of the UK, USA, Australia, The Netherlands, and Canada on evidence-based research in Sub-Saharan Africa could be harnessed by national and regional library and information professionals' associations in the region for collaborative capacity building in relevant evidence-based research skills.

Keywords: Evidence-based biomedical research, Sub-Saharan Africa, Library and Information Professionals, systematic reviews, meta-analysis

Put body of the paper here

INTRODUCTION

Many studies have highlighted the role of library and information professionals in systematic reviews and meta-analysis. Beyond the traditional library and information professionals' role in evidence-based research as expert searchers, methodologists, or information managers (Morris, Boruff, and Gore 2017; Spencer and Eldredge 2018), studies have identified emerging roles which include information management, formulation of research questions, development of search or information retrieval strategy, result collation, and report writing (Morris, Boruff, and Gore 2017). Other studies have identified roles such as project leader, peer reviewer, project manager, literature searcher, reference manager, document supplier, critical appraiser, data extractor, data synthesizer, report writer and disseminator, source selector, and teacher (Grossetta Nardini et al. 2019). Other less documented roles included planning, question formulation, and peer review expert, searcher, organizer, and analyzer (Swinkels, Briddon, and Hall 2006; McGowan and Sampson 2005; Foster 2015). They also identified an eleventh possible role for library and information professionals; that of primary researcher. The authors noted that library and information professionals have evolved from simply acting as evidence locators and 'resource providers' to being quality literature filterers, critical appraisers, educators, disseminators, and even change managers.

Apart from the critical role of library and information professionals in systematic reviews, studies have shown library and information professionals also improve systematic reviews' quality. Systematic reviews in which librarians participated had better quality reported search strategy, and the difference in the search quality vis-à-vis the level of participation of librarians was statistically significant (Rethlefsen et al. 2015). Similarly, it was revealed that librarians positively impacted the reporting practices of standard systematic review methodological elements such as the inclusion of study process flow diagram, the search update date, "the full search strategy, the use of subject-specific and regional bibliographic databases for data collection, and searches of the grey literature" (Meert, Torabi, and Costella 2017). In another study, it was found that librarians' involvement in systematic reviews strongly correlated with the inclusion of a reproducible search (Koffel and Rethlefsen 2016). In a similar study, librarians' participation was found to be significantly associated with the use of recommended search strategies in systematic review standards from the Institute of Medicine, Cochrane Collaboration, and the Agency for Healthcare Research and Quality (Koffel 2015). Librarians' involvement was associated with better compliance with Peer Review of Electronic Search Strategies (PRESS) and the Institute of Medicine's (IOM) standards for systematic reviews standards (Hameed et al.

2020). In these studies, systematic reviews that included librarians as a team member was consistently found to include, execute and report better search designs.

Given that previous studies showed that the prevalence of sub-optimal search strategy introduces bias into evidence gathering (Koffel and Rethlefsen 2016; Golder, Loke, and McIntosh 2008; Sampson and McGowan 2006), librarians' positive impact at improving search quality is important to quality evidence-based research. In light of librarians' role and positive impact on the overall quality of systematic review studies, researchers have called for librarians' inclusion in systematic reviews (Metzendorf 2016). Studies have reported the frequency of involvement of librarians in systematic reviews. A study by (9) showed that 17% of the sampled systematic reviews reported librarians' involvement. Of the randomly sampled study-level meta-analyses in the ten highest-ranked clinical journals, 20% referenced librarians' contribution (Hameed et al. 2020). (Eskrootchi et al. 2020) found that 13.6% of systematic reviews from Iranian researchers reported the inclusion of librarians. A study of systematic reviews published in the twenty highest impact factor paediatrics journals from 2002 to 2011 showed that 44% of the authors indicated a librarian's involvement in conducting the systematic review (Meert, Torabi, and Costella 2017).

In summary, library and information professionals play significant role in the systematic reviews and meta-analysis research. The literature also reveals that library and information professionals in Sub-Saharan Africa worked on systematic reviews and meta-analysis, performing article retrieval, database selection, reference management, draft review, review conceptualization, manuscript writing, technical support, article screening and selection, data extraction, abstract review, and training and teaching (Asubiaro and Elueze 2022). Beyond the categories of roles played by the library and information professionals in Sub-Saharan Africa, this study presents a quantitative analysis of the contributions of the library and information professionals to national output on systematic reviews and meta-analysis in the biomedical research area.

METHODOLOGY

This study is part of a research project that was funded by the Medical Library Association. Asubiaro and Elueze (2022) is an aspect of the project and contains more details of data collection procedure for this article. Bibliometric data of systematic review and meta-analysis publications with at least one author that has institutional affiliation with a Sub-Saharan African country was retrieved from MEDLINE database using the PubMed search interface. Year of publication was restricted to 2014 to 2019 because the inclusion of author addresses in PubMed data started in 2014¹. A query (details in the appendix) that included the names of all the 46 Sub-Saharan African countries and publication types systematic review and meta-analysis as delimiters was posed to the MEDLINE database. The query also included meta-analysis and systematic review in the text word search so that studies that mentioned systematic review or meta-analysis in their abstracts, keywords or title could also be captured. The search was done on the 2nd of April, 2020 and returned 3171 results. The bibliographic data collected was cleaned by removing duplicates and articles that are not meta-analysis or systematic reviews. Data about country of affiliation of the authors were coded and analyzed. Link strength and network analysis of the bibliometric data was performed with VOSviewer software.

¹ <https://www.nlm.nih.gov/bsd/mms/medlineelements.html>
https://www.nlm.nih.gov/pubs/techbull/so13/brief/so13_author_affiliations.html

The limitation of MEDLINE as a data source for assessing research from Sub-Saharan Africa is acknowledged because of its bias and the under-representation of research of Sub-Saharan Africa. Asubiaro (2021) reported that only 3.51% of journals from Sub-Saharan Africa were indexed in the MEDLINE database. The research showed that EMBASE, another bibliographic database for biomedical research, proved to be a better alternative.

RESULT

Table 1 contains the number of systematic reviews and meta-analysis with authors from countries in and outside Sub-Saharan Africa. Researchers from South Africa (45.84%) contributed to the highest number of systematic reviews and meta-analysis, two times more than any other Sub-Saharan African country, followed by Ethiopia (18.25%), Nigeria (12.63%), Kenya (8.36%) and Cameroon (6.36%). The following are the top five countries outside Sub-Saharan Africa that contributed: USA, United Kingdom, Australia, Canada and the Netherlands.

Table 1: Contribution from Countries in and outside Sub-Saharan Africa

	Sub-Saharan African Countries	National output (number of publications)	Percentage	Countries outside Sub-Saharan Africa	
1	South Africa	1118	45.84	USA	670
2	Ethiopia	445	18.25	United Kingdom	664
3	Nigeria	308	12.63	Australia	363
4	Kenya	204	8.36	Canada	221
5	Cameroon	156	6.36	The Netherlands	213
6	Ghana	148	6.07	Switzerland	196
7	Uganda	145	5.95	Germany	153
8	Tanzania	114	4.67	France	142
9	Zimbabwe	47	1.93	Belgium	125
10	Malawi	35	1.44	Italy	101
11	Zambia	31	1.27	India	93
12	Mozambique	29	1.19	Brazil	87
13	The Gambia	29	1.19	Sweden	84
14	Rwanda	24	0.98	China	81
15	Burkina Faso	21	0.86	Spain	69
16	Senegal	16	0.66	Norway	58
17	Democratic Republic of Congo	15	0.62	Iran	53
18	Gabon	15	0.62	Japan	48
19	Benin	14	0.57	Denmark	45
20	Cote D'Ivoire	14	0.57	Malaysia	33

Information professionals' contribution to National Output

The ratio of information professionals' contribution to Sub-Saharan African countries' national output was calculated and presented in Table 3. The result shows library and information professionals did not contribute to systematic reviews and meta-analysis output of highly productive countries such as Cameroun, Ghana, Zimbabwe, Malawi and Zambia. Information professionals contributed to systematic reviews and meta-analysis in only seven Sub-Saharan African countries (South Africa, Ethiopia, Nigeria, Kenya, Uganda, Tanzania, and Mozambique). Library and information professionals contributed to less than 1% of the systematic reviews that were written in Kenya and Tanzania. Library and information professionals in Uganda and South Africa were the most productive among the Sub-Saharan African countries as they contributed more than 5% to national output. Of the 295 specified addresses, most of the library and information professionals (66%) are affiliated with institutions outside the Sub-Saharan African region. Library and information professionals from South African institutions contributed more than others. Library and information professionals from the United Kingdom, United States, Australia, the Netherlands, and Canada in descending are the countries from outside Sub-Saharan African that contributed most to the systematic reviews; apart from South Africa, library and information professionals from these countries contributed most. In Sub-Saharan Africa, library and information professionals from South Africa, Ethiopia, Uganda and Nigeria contributed the most.



Table 3: Library and Information Professionals' contribution to the National Output of Sub-Saharan African countries

	Country in Sub-Saharan Africa	Contribution to national output	Other countries	
1	South Africa	6.08%, n=68/1118	UK	43
2	Ethiopia	2.70%, n=12/445	USA	39
3	Nigeria	1.95%, n=8/308	Australia	30
4	Kenya	0.98%, n=2/204	The Netherlands	27
5	Uganda	8.28%, n=12/145	Canada	26
6	Tanzania	0.88%, n=1/114	Switzerland	5
7	Mozambique	3.45%, n=1/29	Germany	4
8			Norway	4
9			Iran	4
10			China	3
11			Belgium	2
12			Denmark	2
13			Sweden	1
14			Japan	1
15			Malaysia	1

DISCUSSION OF FINDINGS

This study investigated the contributions of library and information professionals to evidence-based biomedical research outputs of Sub-Saharan African countries to understand the depth of the contribution of library and information professionals from the region. Systematic reviews and meta-analysis publications, with at least an author from an institution in Sub-Saharan Africa, that were published between 2014 and 2019 were collected from MEDLINE using the PubMed search engine. The study revealed that the most productive Sub-Saharan African countries in evidence-based biomedical research are South Africa, Ethiopia, Nigeria, Kenya, Cameroun, and Ghana. It appears that Ethiopia and Cameroun ranked better in evidence-based biomedical research than in earlier studies (Confraria and Godinho 2015; Adams et al. 2014). Some of the usual top five most productive Sub-Saharan African countries like Tanzania and Uganda missed the top spots.

This study shows that library and information professionals from only seven (South Africa, Ethiopia, Nigeria, Kenya, Uganda, Tanzania, and Mozambique) of the 46 Sub-Saharan African countries contributed in some capacity to evidence-based biomedical research. Beyond the surface statistics, library and information professionals from only two countries -South Africa and Uganda contributed to more than 5% of national output on evidence-based biomedical research. Library and information professionals from highly ranked countries like Cameroun, Ghana, Zimbabwe, Malawi, and Zambia did not contribute to evidence-based biomedical research in the sampled articles. Library and information professionals from

outside the Sub-Saharan African region (66%) contributed twice more

than library and information professionals that are affiliated to an institution in the region (33%). Library and information professionals from western countries such as United Kingdom, United States, Australia, the Netherlands and Canada contributed to a higher number of evidence-based articles than Sub-Saharan countries' library and information professionals, save for South Africa. With the low contribution of library and information professionals from Sub-Saharan Africa to systematic reviews and meta-analysis, it could be inferred that the professionals have a market of prospective patrons in the researchers that are already performing evidence-based biomedical research in the enclaves.

There is a need for further research to determine why library and information professionals in the Sub-Saharan region contribute insignificantly to evidence-based biomedical research. Perhaps there are training gaps that need to be filled for medical and health information professionals in the Sub-Saharan Africa region, as noted in earlier studies (Sears et al. 2019; Kinengyere et al. 2020). There appears there is no training on evidence-based research in Sub-Saharan Africa for Health and Medical librarians. Alternatively, the LIS curriculum of information schools in Sub-Saharan Africa needs to include content that will give students the skills to contribute to evidence-based research.

Considering the pattern of contributions of the library and information professionals to national output, two major patterns emerged differently from the analysis. First, the contribution of South Africa was outstandingly different from other parts of Sub-Saharan Africa. This is not a surprise, given that South Africa is the usual best performer in research, including LIS, in Africa (Onyancha 2018; Asubiaro 2019). However, it begs for an answer to why library and information professionals in South Africa were able to contribute so much to evidence-based biomedical research. Perhaps, they have better training for library and information professionals and LIS curriculum. Another pattern that stuck out was the library and information professionals that contributed from Uganda were all as authors, this is an indication of influence and impact.

CONCLUSION AND RECOMMENDATION

Our study shows that library and information professionals and researchers from the United Kingdom, United States of America, Australia, Canada and the Netherlands contributed more to evidence-based research in the region than the Sub-Saharan African countries apart from South Africa. We recommend library and information professionals (individuals and associations) collaborate with relevant evidence-based organizations such as the Medical Library Association (MLA), University of Adelaide's Joanna Briggs Institute, Campbell collaboration resource centre Cochrane evidence-based institute in these countries- United Kingdom, United States of America, Australia, Canada and the Netherlands (with a history of collaborating with Sub-Saharan Africa on evidence-based biomedical research) for capacity building.

Limitations of the Study

Lastly, methods sections of the full texts of the retrieved titles were searched for library and information specialists by the authors; while the accuracy of this method is undoubtedly excellent, this method is tedious for large datasets such as the one used in this study and could be subject to human errors.

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Appendix

Step #1: Nigeria[Affiliation] OR South Africa[Affiliation] OR Ghana[Affiliation] OR Tanzania[Affiliation] OR Kenya[Affiliation] OR Rwanda[Affiliation] OR Botswana[Affiliation] OR Cameroun[Affiliation] OR Senegal[Affiliation] OR Angola[Affiliation] OR Uganda[Affiliation] OR Mali[Affiliation] OR Sierra Leone[Affiliation] OR Ivory Coast[Affiliation] OR Ethiopia[Affiliation] OR Lesotho[Affiliation] OR Zambia[Affiliation] OR Zimbabwe[Affiliation] OR Namibia[Affiliation] OR Guinea[Affiliation] OR Mauritius[Affiliation] OR Mozambique[Affiliation] OR Niger[Affiliation] OR Seychelles[Affiliation] OR Burkina Faso[Affiliation] OR Burundi[Affiliation] OR Cape Verde[Affiliation] OR Cameroon[Affiliation] OR Central African Republic[Affiliation] OR Chad[Affiliation] OR Comoros[Affiliation] OR Democratic Republic of Congo[Affiliation] OR DR Congo[Affiliation] OR Djibouti[Affiliation] OR

Cote D'ivoire[Affiliation] OR Congo[Affiliation] OR Equatorial Guinea[Affiliation] OR Eritrea[Affiliation] OR Gabon[Affiliation] OR Guinea-Bissau[Affiliation] OR Madagascar[Affiliation] OR Congo Republic[Affiliation] OR Sao Tome and Principe[Affiliation] OR Swaziland[Affiliation] OR Togo[Affiliation] OR Benin[Affiliation] OR Liberia[Affiliation] OR Namibia[Affiliation] OR Gambia[Affiliation] OR (Cent Afr Republ[Affiliation]) OR (Equat Guinea[Affiliation]) OR (Papua N Guinea[Affiliation]) OR (Sao Tome E Prin[Affiliation]) OR Principe[Affiliation] OR Sao Tome E Principe[Affiliation]

Step #2: Set Filter to: Meta-Analysis[ptyp] OR systematic[sb]

Step #3: Text word search systematic review[Text Word] OR meta-analysis[Text Word] OR meta analysis[Text Word]

Step #4: Set publication date to: "2014/01/01"[PDAT] : "2019/12/31"[PDAT]

Query=(Step #1) AND (Step #2 OR Step #3) AND (Step #4)



Automation of Duplicate Detection for Systematic Reviews

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Abstract:

In this paper, we investigate the use of an automation tool, the “Deduplicator” for removing duplicate articles from a multi-database search for systematic reviews. We compare the Deduplicator to a manual method using EndNote to deduplicate articles by testing the performance on 10 previous Cochrane systematic reviews. Two researchers each performed deduplication on the ten libraries.

For five of those libraries one researcher used the Deduplicator, while the other one performed manual deduplication with EndNote. They then switched methods for the remaining five libraries.

With the Deduplicator tool, the average time to deduplicate a library was 8.2 minutes compared to 27 minutes with the manual method. Researchers averaged 299.53 references per minute when using Deduplicator compared to 99.22 references/minute with the manual method. Deduplicator achieved an average accuracy of 99.82% compared to 99.70% for the manual method. This demonstrates evidence that using the Deduplicator for duplicate article detection reduces the time taken to deduplicate, while maintaining or improving accuracy compared to using EndNote.

Keywords: Deduplication, Systematic Reviews, Duplicate Articles, Searching, Automatic.

Introduction:

Systematic Reviews are considered the best way to answer a research question. However, they are resource intensive; taking on average, five staff, 67 weeks to complete (Borah, Brown, Capers and Kaiser, 2017) at an average cost of USD \$141,000 (Michelson and Reuter, 2019). To overcome this resource burden, Systematic Review Automation (SRA) tools have been developed to improve the speed of Systematic Review (SR) tasks, without compromising quality (Beller et al., 2018). A time-consuming task is to remove duplicate records from search results. This can take even experienced searchers hours to complete. We have designed an SRA tool the “Deduplicator” with the goal of speeding up this process, while also maintaining a high degree of accuracy. This paper aims to evaluate the effectiveness of the Deduplicator tool at minimising time spent screening while maximising accuracy. The Deduplicator tool is freely accessible online at the following link (<https://sr-accelerator.com/#/deduplicator>).

Background:

When performing a systematic review, it has become standard to perform a multi-database search when finding evidence to ensure evidence is unbiased and complete (McKibbin, Wilczynski, Eady and Marks, 2009). However, databases may list the same reference twice, meaning that the citation appears more than once, also known as a duplicate article (Kwon, Lemieux, McTavish and Wathen, 2015). This complete list of references is known as a “library” and before performing screening in a systematic review, it is ideal to remove any duplicate articles from the library to minimise redundant time spent screening same article twice. This process is referred to as deduplication.

Methods:

Ten libraries were randomly chosen from past Cochrane systematic reviews, published in the last five years (Jan 2017 – Sep 2021) where there were at least two databases listed in the review. Searches were run as they were written in the review, with no date limits applied in all listed searches. Searches were run in all bibliographic databases listed in the review but were not performed in databases not available at Bond University. Specialised registers, trial registries and grey-lit databases were also excluded. If searches returned less than 500 references or greater than 10,000 references, the review was discarded.

To evaluate the Deduplicator we will compare deduplication done manually and done with the Deduplicator on the following outcomes: 1) time required to deduplicate; 2) numbers of duplicates missed; 3) number of non-duplicates removed. Two screeners (HG & JC) will independently deduplicate 10 sets of search results. The first screener will do sets one to five manually, then sets six to 10 with the Deduplicator. The second screener will do the opposite, e.g., sets one to five with the Deduplicator, then sets six to 10 manually (see Table 1). Here, manual deduplication is defined as using Endnote on an adapted deduplication method originally proposed by Bramer (Bramer et al., 2016). In the Deduplicator, the “Balanced” algorithm was selected for evaluation. Researchers also timed themselves on how long it took to perform deduplication on each library.

Systematic Review (Author Year)	Hannah Greenwood (Method)	Justin Clark (Method)
Lorentzen 2020	Manual	Deduplicator
Alebed 2020	Deduplicator	Manual
Dawson 2021	Manual	Deduplicator

Wiffen 2017	Deduplicator	Manual
Kamath 2020	Manual	Deduplicator
Ghobara 2017	Deduplicator	Manual
Bennett 2018	Manual	Deduplicator
Hannon 2021	Deduplicator	Manual
Roberts 2020	Manual	Deduplicator
Jaschinski 2018	Deduplicator	Manual

Table 1: Distribution of manual vs Deduplicator methods between researchers

For resolving the errors, both participants libraries were compared against each other. Any discrepancies between the duplicate results for both libraries were manually checked and verified by consensus between two authors (HG & CF). If a reference was incorrectly classified as a duplicate when it is in fact a unique article, it is labelled as a "false positive", while a duplicate which was missed is marked as a "false negative".

Results:

While testing on the libraries, Deduplicator was on average 330% faster compared to the manual EndNote method (8.2 minutes vs 27.0 minutes respectively). The median time of the Deduplicator was 6.5 minutes compared to 25 minutes for the manual method. The results for each library are displayed in Table 2. Deduplicator averaged 299.52 references per minute while the manual method averaged 99.22 references per minute (see Table 3).

Systematic Review (Author Year)	Study Size (Number of References)	Deduplicator (Minutes)	Manual (Minutes)
Lorentzen 2020	813	4	30
Alebed 2020	1479	14	15
Dawson 2021	3912	6	76
Wiffen 2017	1028	9	7
Kamath 2020	1785	4	36
Ghobara 2017	1807	7	24
Bennett 2018	2111	4	35
Hannon 2021	1061	5	6
Roberts 2020	3181	9	15
Jaschinski 2018	2447	20	26
Average	1962.4	8.2	27.0
Median	1796	6.5	25.0

Table 2: Full break-down of the time taken to deduplicate with each method

Author	Deduplicator (references/minute)	Manual (references/minute)	Average
HG	162.51	80.11	121.30
JC	436.53	118.33	277.44
Average	299.53	99.22	

Table 3: Average number of references deduplicated per minute (by author)

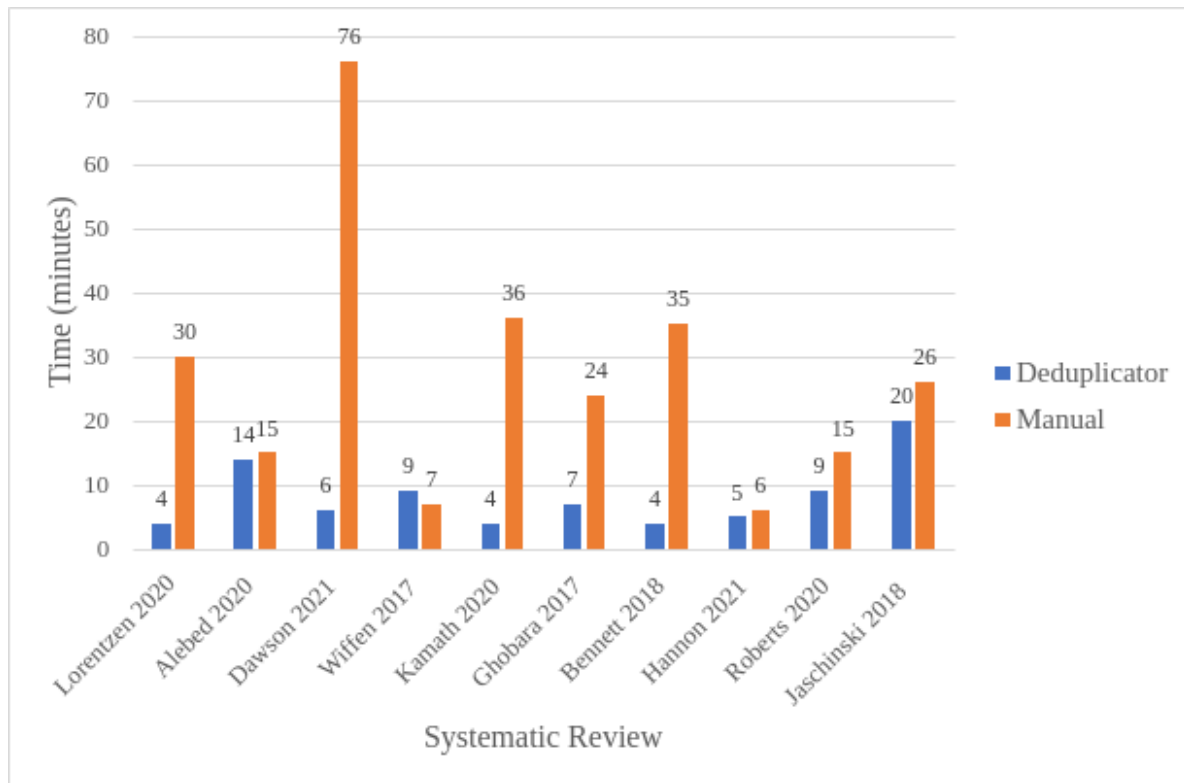


Figure 1: Time taken to deduplicate each systematic review

On average, Deduplicator made 3.3 errors per systematic review, while the manual method had an average of 6.2 errors per systematic review. The median number of errors for Deduplicator and the manual method were 3 and 5, respectively. This resulted in an average accuracy for Deduplicator of 99.82% compared to 99.70% for the manual Endnote method. These results are explored further in Table 4.

SR	Total References	Deduplicator			Manual		
		False Negative	False Positive	Errors	False Negative	False Positive	Errors
Lorentzen 2020	813	0	0	0	1	1	2
Alebed 2020	1479	5	1	6	3	5	8
Dawson 2021	3912	0	2	2	5	2	7
Wiffen 2017	1028	0	1	1	0	0	0
Kamath 2020	1785	2	0	2	1	1	2
Ghobara 2017	1807	4	2	6	2	3	5
Bennett 2018	2111	2	1	3	2	2	4
Hannon 2021	1061	0	3	3	3	2	5
Roberts 2020	3181	0	3	3	4	12	16
Jaschinsk	2447	5	2	7	8	5	13

i 2018							
Average	1962.4	1.8	1.5	3.3	2.9	3.3	6.2
Median	1796.0	1.0	1.5	3.0	2.5	2.0	5.0

Table 4: Comparison of number of errors for each library

Discussion:

The results show evidence that Deduplicator can perform deduplication to a high degree of accuracy, while also reducing the time needed to perform deduplication compared to using the manual EndNote method. The most important statistic is the low rate of false positives when using Deduplicator. False positives are the least desirable error as it means that an article which may contain relevant evidence to the systematic review protocol is discarded. The low false positive rate of Deduplicator (average 1.5 references per library) is desirable here as more relevant evidence improves the quality of a systematic review.

One interesting result is that for the “Wiffen, 2017” systematic review, Deduplicator was slower to deduplicate compared to the manual EndNote method. The explanation for this may be the difference in speeds between the two researchers, where JC on average deduplicated 277.44 references per minute compared to 121.30 for HG (see Table 3). Because the Wiffen library is relatively small (1028 references), it is possible that JC’s extra experience allowed him to deduplicate the library quicker in EndNote compared to how quickly HG could do it in Deduplicator. This difference in deduplication speed/accuracy between authors is one limitation of this study design, and while it is partially mitigated by the equal split of methods used by each author; it is not possible to eliminate this bias entirely. Despite this, independent analysis of each author revealed that Deduplicator increased the number of references they could deduplicate per minute (see Table 3).

Furthermore, another limitation behind this study design is that if both authors incorrectly classified an article, it would not be counted as an error. However, as this is a head-to-head comparison, this limitation would not affect the comparison in accuracy between the two methods.

It should also be noted that there are multiple other deduplication tools available to perform duplicate detection. A study run by McKeown on various deduplication methods found that the highest accuracy deduplication tools were Ovid and Raayan, both achieving an accuracy of 0.97 (McKeown and Mir, 2021). While no direct comparison can be made to the existing literature due to the difference in datasets, the accuracy the Deduplicator achieved (average 0.99) may warrant a future comparison between other deduplication tools using a consistent dataset.

Conclusion:

This investigation shows evidence that the Deduplicator is quicker for the deduplication of articles compared to manual EndNote methods, without sacrificing any accuracy. Deduplicator eliminates the need to research a deduplication method in EndNote, as the tool provides a preconfigured strategy for the user. This both allows an easier point of entry for new researchers to begin deduplicating, as well as providing time-saving bonuses for more experienced researchers without any loss of accuracy.

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Knowledge for Healthcare: sustaining a coherent national approach

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Abstract:

To deliver excellent healthcare, the National Health Service (NHS) needs the right knowledge services and teams, underpinned by the right resources.

Health Education England (HEE) is the strategic lead for NHS knowledge and library services in England. Focused on action to enhance and sustain a coherent national approach, the *Knowledge for Healthcare* strategy 2021-2026 builds on recent achievements and sets priorities. This presentation considers factors critical to success, levers for change and opportunities to maximise the contribution of health librarians, meeting the goals of the NHS in our digital age.

Engaging across the system is key - working with partners to drive policy and maximise investment in knowledge resources. The national team leads an exciting and comprehensive programme of interventions, creating a national resource discovery infrastructure for both novice and expert searchers. Improving access and reducing administrative burden, HEE has initiated transition from legacy Library Management Systems to regionally shared LMS.

Improving patient safety, saving lives, delivering high quality care, rely on informed decision-making by clinicians, managers and patients. Libraries offer a fantastic range of services. HEE is a strong advocate, demonstrating the value proposition for libraries and their positive impact. The Quality and Improvement Outcomes Framework offers employers assurance that staff and learners benefit from high-quality knowledge services.

Mobilising evidence from research alongside learning from experience requires enhanced capacity and capability. HEE recommends increasing the number of qualified librarians especially in embedded roles. Priorities include the education and training of health librarians, developing a diverse and inclusive workforce. HEE is launching a specialist learning academy to offer accredited continuing professional development. Equally it is crucial to upskill health professionals to share 'know-how', adopt and spread innovation. The pandemic has demonstrated the importance of equipping citizens to be health literate, to make best use of health information and health services.

Keywords: Value; Resource discovery; Mobilising evidence; Health literacy; Workforce development

Introduction

It is not enough to have the right healthcare teams with the right skills in the right place. It is also essential that they use the right knowledge and evidence to make informed decisions about patient healthcare. Improving patient safety and delivering high quality and efficient care rely on informed decision-making by clinicians, managers and patients. To achieve excellent healthcare, health services also need the right knowledge services and teams, underpinned by the right resources.

The National Health Service (NHS) in England has 193 autonomous libraries largely based in acute hospitals, but also in mental health and community health services. These deliver knowledge services to trainees and staff. A handful of universities also provide these services to NHS staff as well as to students.

Formed in 2012 to ensure that the NHS workforce has access to “education and training that is truly world class and quality assured”, Health Education England (HEE) also leads on the strategic development of NHS libraries and partially funds them (Department of Health, 2012, p.4). HEE’s national NHS knowledge and library services team is also responsible for procuring core digital knowledge resources on behalf of the workforce and trainees.

The purpose of this paper is to describe our strategic approach to shaping and sustaining the development of these services. Envisaged as a fifteen-year programme of work, Knowledge for Healthcare: a development framework 2015-2020, was published in December 2014 (HEE, 2014). Our second five-year strategy was published in January 2021 (HEE, 2021a). This paper reports on progress in delivering on the ambitions of Knowledge for Healthcare from 2015 (HEE, 2014; HEE, 2021a). It shares reflections on factors critical to the success achieved to date, and lessons learned. Looking ahead, levers for change and opportunities to maximise the contribution of health librarians to the NHS in our digital age are discussed.

Aim of the national strategy

HEE’s aim in publishing the national strategy for NHS knowledge and library services is to:

- Set direction, articulate a clear ambition and establish priorities
- Invite partners to work with us “to transform and optimise healthcare library and knowledge services, harness new technologies, and champion service development and re-configuration”
- Guide investment decisions, nationally and locally
- Encourage the spread and adoption of best practice and ‘new’ models of service delivery (HEE, 2014).

Taking a strategic approach

We completed a thorough review – assessing the political, economic, social and technological environment to determine system drivers of change; researching models of service; listening to healthcare staff, trainees, education leads and library teams (HEE, 2014, p.12).

Using improvement tools

We used quality improvement tools to shape the strategy: using the NHS Change Model (NHS England, 2018) and also driver diagrams to shape, challenge and refresh our thinking.

The Change Model is a helpful organising framework for programmes seeking to adopt a shared approach to achieve transformational, sustainable change. It has eight components, all of which must be addressed effectively: Shared purpose, Motivate and mobilise, Leadership by all, Spread and adoption, Improvement tools, Project and performance management, Measurement and System drivers (NHS England and NHS Improvement, 2021).

We engaged with colleagues through the planning process by using driver diagrams as a strategic planning tool (NHS England and NHS Improvement, 2021). The overarching driver diagram for Knowledge for Healthcare 2021-26 is shown as Figure 2 (HEE, 2021a, p.23).

Shared purpose

Engaging widely, we were able to articulate a shared vision for Knowledge for Healthcare: ‘NHS bodies, their staff, learners, patients and the public use the right knowledge and evidence, at the right time, in the right place’ (HEE, 2014, p.9; HEE, 2021a, p.6).

Guiding principles

From the start we identified guiding “principles and values on which to base decisions, plus design criteria for transforming healthcare library and knowledge services” (HEE, 2014, p. 17). We aimed to empower library teams to make, and take, opportunities to lead and influence service modernisation. Attention to the sustainability of knowledge and library services lies at the heart of these principles: building infrastructure and capacity for the future and developing the digital tools needed to enable effective service delivery. The principles proved “a helpful touchpoint for decisions on ways of working and investment for all NHS organisations that manage knowledge and library services” (HEE, 2021a, pp.61-62).

In 2020 we added a commitment to Sustainability. “Knowledge specialists have a dual role in contributing to the sustainability agenda, within the knowledge service itself and by providing the evidence to underpin policy, commissioning, operational practice and training” (HEE, 2021a, p.63). HEE supports local communities of practice, inviting health libraries to consider changing working practice and their contribution to a low-carbon society.

Refreshing the strategy

Through 2019-20, the team reviewed the strategy, the policy context, the environment and recent research, and engaged with stakeholders. The Long-Term plan, published in 2019, speaks of the “strong scientific tradition of evidence-based decisions about care” (NHS, 2019, p.11) and the need for ready access to decision support (NHS, 2019, p.6). These statements reinforce the rationale for investment in health libraries.

During the first five years, the national team began to focus on evaluation, measurement, project and performance management. As a result, we were able to draw on a wider collection of data as we refreshed the Knowledge for Healthcare strategy for 2021-6.

What did we set out to achieve?

Health libraries offer a fantastic range of services yet we all know there is more to be done to support informed decision-making. In the preface to Knowledge for Healthcare in 2015, Prof Ian Cumming, OBE, Chief Executive of HEE said: “Healthcare library and knowledge services are a powerhouse of education, lifelong learning, research and evidence-based practice. Our ambition is to extend this role so that healthcare knowledge services become business-critical instruments of informed decision-making and innovation“. (HEE, 2014, p.2).

We know that “Evidence does not speak for itself but needs to be mobilised at the right time, and through the right people” (HEE, 2014, p.26). Therefore the focus was on equipping and supporting local teams to deliver proactive knowledge services, providing quick and easy access to evidence, developing our specialist workforce, demonstrating the quality and impact of services and optimising funding (HEE, 2014, p.50).

Turning strategy into action: how did we get on?

A programme manager was appointed for one year following publication to establish a robust programme and project management infrastructure through which the work could be progressed and monitored. This has stood the national team in good stead. Later, regional teams were formed into a single national team and a national lead was appointed. This is now a full-time, permanent post. With the team, this role has been critical in driving the ambition, the pace and delivering and sustaining a coherent national approach over a sustained period.

The national team leads an exciting and comprehensive programme delivered through focused work-streams. Progress since 2014 is summarised in the Appendices of the refreshed strategy (HEE, 2021a, pp.55-57). Here the aim is simply to give a flavour of the work:

Mobilising evidence and organizational knowledge: focused on enabling NHS organisations to Apply evidence, Build know-how, Continue to learn and Drive innovation. We developed practical tools, notably introducing [a self-assessment tool](#) (HEE Knowledge and Library Services, 2022a) for leaders to assess organisational opportunities to make better use of evidence and expanding the [NHS Knowledge Mobilisation Framework](#) (HEE and eLfh, 2018) to share simple knowledge management techniques (Day and Goswami, 2020). The [#AMillionDecisions](#) advocacy campaign (HEE Knowledge and Library Services, 2022b) highlights the positive impact of healthcare librarians.

Patients and the public: initially focused on upskilling library teams to enable them, whether indirectly or directly, to help to ensure access to evidence-based information for patients and the public. Our Development Needs Survey of NHS library staff saw ‘patient and public information’ fall from 9th to 30th place between 2017 and 2019. Data from the former Library Quality Assurance Framework showed 78% of NHS libraries supporting patient and public information in 2018, an increase from 27% in 2014 (Carlyle et al., 2021). The next stage was to raise awareness among healthcare staff of the impact of low levels of health literacy.

Resource Discovery: we have taken great strides to enhance user experience, streamline the delivery of digital knowledge resources and support collaborative procurement. Improving access and reducing the administrative burden, HEE has initiated transition from over 90 legacy Library Management Systems (LMS) to less than ten regionally shared LMS (HEE, 2021a, p.39). Launching the [Knowledge and Library Hub](#) in January 2022 (HEE Knowledge and Library Services, 2022c) as a resource discovery infrastructure for both novice and expert searchers is a groundbreaking advance for the NHS in England. Meanwhile, investment in [BMJ Best Practice](#) (BMJ, 2022) as a national Clinical Decision Support tool, was a significant step. With c7.5m page views in 2021-2, case studies from healthcare staff bring to life the importance of this tool for improved patient safety, education and staff confidence

Quality and Impact: the team has refreshed and promoted our [Value and Impact Toolkit](#), (HEE, 2021b), considered Metrics for Success, developed an Evaluation Framework for the strategy as a whole, and created a new [Quality and Improvement Outcomes Framework](#) (Edwards and Gilroy, 2021; HEE, 2019a). This Framework represents a fundamental shift in

emphasis to focus on outcomes rather than process (HEE, 2021a, p.31). Meanwhile, encouraging the submission of impact [case studies](#) (HEE Knowledge and Library Services, n.d.a) provides a body of content that celebrates the work of local teams and can be used in communications to attract more decision makers to make the best use of the service.

Workforce Planning and Development: the strategy calls for ‘flexible, multi-skilled knowledge specialists’ (HEE, 2014, p.37). We took a systematic approach (Lacey Bryant and Stewart, 2020a; 2020b; 2020c) using the Six Step Model of Workforce Planning and Development, taking into account current and future demand for services (Lacey Bryant and Stewart, 2020a). We have considered new ways of working, the need for upskilling and role redesign and the supply pipeline. The launch of our [Knowledge for Healthcare Learning Academy](#) accredited by CILIP in December 2021(HEE Knowledge and Library Services, 2021a) opens an exciting new chapter. Today’s priorities include addressing workforce supply and developing a diverse, inclusive workforce. These are vital to ensuring the sustainability of NHS knowledge and library services.

Reporting on the metrics

In 2014 we identified several metrics as indicators of our collective success in delivering the strategy (HEE, 2014, p.47). While we have not yet delivered on every metric, there is no doubt that we have made a significant difference, making progress in each area of the strategy (HEE, 2014, p.50). Working with local library teams and with partner organisations “we have improved the quality of NHS knowledge and library services, in England, extended their reach and expanded the range of digital knowledge resources” (HEE, 2021a, p.2).

We aimed to set ambitious targets, which were a stretch but achievable over time. Tasked with monitoring these, we quickly realised that we needed a better understanding of the data available and to become more proficient at defining meaningful measures. Working with colleagues across the system, we continue to persevere to improve the quality of our data.

Increase in evidence of impact

Aim: Increase in use of the refreshed [Value and Impact toolkit](#): (HEE Knowledge and Library Services, 2021b) used by 95% of services.

Progress: We updated the toolkit; by Spring 2019 a survey reported that 75% of libraries were using this. Meanwhile, impact case studies has become the most powerful means of demonstrating the impact and value of services across England (Edwards and Gilroy, 2021). By 2020, HEE had published and promoted 350+ local impact narratives (HEE, 2021a, p.57).

Increase in quality of services

Aim: Increase proportion of library and knowledge services over 90% compliant within the NHS Library Quality Assurance Framework: target of 98%.

Progress: We delivered improvement from 81% to 92% of libraries reaching this standard. We have since designed and implemented a [Quality and Improvement Outcomes Framework](#) (HEE Knowledge and Library Services, 2021b) emphasising service improvement.

Increase in use of libraries and digital resources

Aim: Increase the number of NHS staff using NHS-funded knowledge resources and services: by 10%.

Progress: Libraries reported a 30% increase between 2014 and 2019, with registered users of NHS knowledge and library services rising to 622,616 from 480,000 (HEE, 2021a, p.54).

Aim: Increase proportion of staff in medical and dental; nursing and midwifery; allied health; scientific and technical; using NHS-funded knowledge resources and services: by 20%.

Progress: Lack of detail in data reporting undermined our ability to report on this metric. 139K users were registered by library teams as ‘Other’ rather than by staff group. From this limited data (HEE, 2014, p8; HEE, 2021a, p.54) we could determine:

- the numbers of ‘medics’, dentists, nurses and midwives registered to use NHS libraries was stable between 2014 and 2019; thus the % reduced rather than increased.
- there was significant growth in the number of allied health professionals registered (up 22K) and of scientific and technical staff (up 19K)
- by 2019 the number of students registered increased from 79K to 86K.

Improvements in service offer

Aim: Increase the proportion of knowledge services with clinical/outreach librarians: to 80%

Progress: We saw minimal change, from 58% to 63% of services offering an embedded role in 2019. However, HEE is now supporting a vanguard of embedded posts in primary and community care, intended to amplify the value of this model of service delivery.

Aim: Increase in production and use of nationally-produced horizon scanning bulletins: 25% increase in Year 1; 10% in years 2 and 3.

Progress: While we did not meet this target, we have effected a discount for subscriptions by individual trusts to [KnowledgeShare](#) (KnowledgeShare, 2022) a bespoke software system, as a cost-effective means to significantly extend the reach of tailored current awareness alerts.

Improvements in Knowledge Services workforce development

Aim: Define core and specialist competencies, setting ambitious targets for its use.

Progress: with CILIP, we issued a health version of the [Professional Knowledge and Skills Base](#) (PKSB) in 2019 (HEE Knowledge and Library Services, 2021c). The PKSB has since been updated, expanding content on knowledge management, digital and data management. Individuals use this to identify strengths and prioritise development needs. It can also be used by teams. We published a [Healthcare Sector Guide](#) to the PKSB in June 2021 (CILIP).

Aim: Double the amount of investment in national, collaborative procurement of e-resources.

Progress: HEE doubled its investment in digital knowledge resources on behalf of the NHS.

Reflecting on the experience of the pandemic

“As the world has responded to the most significant health crisis of modern times, the dissemination, interpretation and application of evidence, knowledge and insight has led the fight against covid-19.” Through the pandemic “the role of knowledge in the NHS has come to the fore (Lacey Bryant, 2021a). The dedication and expertise of librarians has gained a higher profile. Professor Chris Whitty, Chief Medical Officer for England, commented: “The role of library and information professionals in the NHS, government and the academic sector during the pandemic has been superb, and a clear demonstration of how information and data should underpin decision making at all levels” (cited in Wood, 2021).

The pandemic showed the importance of equipping citizens to make best use of health information and health services. The HEE team stepped in to facilitate healthcare staff to find reliable [Coronavirus information](#) (HEE Knowledge and Library Services, 2021d) that they can be confident to share with patients, families and clients (Carlyle and Robertson, 2021).

The national team is keen to avoid duplication of effort by hard-pressed staff at this time, and when speed of dissemination is so vital. Accordingly, we established both a bank of [Coronavirus literature searches](#) (HEE Knowledge and Library Services, 2021e) and a collection of [Covid-19 current awareness bulletins](#) that librarians were willing to share (HEE Knowledge and Library Services, 2021f; Edwards et al., 2020). This experience has fostered a greater appetite for collaboration amongst participants (McClaren, 2020).

This is not to downplay the challenges. At times some library staff have been relocated, some reassigned. Teams have needed to adapt the workplace; some people have worked remotely throughout. This has disadvantages, not least diminishing opportunities for networking.

What have we learned?

Implementation of HEEs Knowledge for Healthcare strategy to date indicates factors that we believe critical to success in sustaining the development of NHS knowledge and library services, plus several areas in which we could improve to better enable and maintain progress.

Strategic approach: From experience we strongly advocate the value of a systematic, strategic approach to shaping a sustainable future for health libraries. Combined with senior national leadership, this gives local library teams “the authority to initiate local strategic conversations” about their role that might not otherwise be possible. An integrated approach to system-wide change is important, building engagement and support for the strategic direction and nurturing partnerships to facilitate activity. Exemplified through the health literacy workstream (Carlyle et al., 2021), this is evident across the entirety of the work.

Improvement tools: using improvement tools has paid dividends for the team – providing a structured approach to articulating our aim and objectives, building consensus around the specific interventions needed to help deliver improvement and communicating strategy.

A compelling vision: a shared purpose, which attracted universal ‘buy in’, has motivated and mobilised colleagues ‘on the ground’ to get behind the work required to improve NHS knowledge and library services.

Engagement: vision, together with clear principles, can activate a high level of discretionary effort. The way in which health librarians share their expertise and enthusiasm to drive Knowledge for Healthcare is striking. Between 2015 and 2020 more than a half of qualified librarians and knowledge specialists in the NHS were directly involved in project or advisory groups. At November 2021, amidst the pandemic, a third were actively involved (194).

Partnership working: HEE operates as part of a broad ecosystem bringing knowledge, research and evidence to the workforce (HEE, 2021a, p.8). Our partnerships are central to success. We work jointly with other NHS bodies, particularly NICE, the National Institute for Health and Care Excellence. Teams draw on each other’s knowledge and skills, and talk over challenges. Meanwhile, the national team has been structured with regional-facing teams, charged to strengthen working relationships across the library community (HEE, 2014, p.10).

Programme management: while the discipline of project and performance management does not enthuse everyone, the creation of a clear plan and regular monitoring of progress has ensured focus, and facilitated the team to address issues before they become problems. It also creates opportunities to thank everyone involved and to pause to celebrate achievements.

Measurement: struggling to apply all the metrics initially agreed, we formed a project group to propose Principles for Good metrics (Fricker and Parker, 2016). Learning the importance of defining metrics that are Meaningful, Actionable, Reproducible and Comparable, we have gained confidence that we are establishing better foundations for measurement in future.

Data quality: we found challenges to achieving optimum data quality to inform ongoing planning. Library teams do not always appreciate the value of providing accurate data that can be aggregated at national level. As an example in 2019, 139K users were registered by library teams as ‘Other’ rather than by staff group (in comparison with 24K in 2014). The consequent inability to track trends in usage by occupational group represents a lost opportunity for meaningful discussion with the relevant Heads of Profession in the NHS.

Incentives: we learned to consider ways to attract commitment and to achieve compliance. Within the health literacy workstream we found that the opportunity to get involved in shaping interventions through project work offered a means of professional development and enabled participants to broaden their networks. Alongside this, in 2017 we amended the former Library and Quality Assurance Framework so that the patient and public information’ criterion became a compulsory requirement on which services needed to evidence activity. By 2018, 77% were fully compliant (compared with 38% in 2016) (Carlyle et al., 2021).

Levers for change

We recognise the imperative to maintain a national approach to deliver the strategy. National leadership of a central team has enabled the team to build consensus on strategic direction and future vision, attracting a high level of engagement while overcoming the fragmentation inherent within former regional approaches.

Nationally we have invested energy in creating [levers for change](#) that might be used by local stakeholders as well as the national team to influence decision-makers (Lacey Bryant, 2021b). The following illustrate the three main approaches we are taking:

Policy: HEE has issued a series of policy recommendations to guide the delivery of NHS Knowledge and Library Services. These include: an [NHS Library and Knowledge Services in England Policy](#) (HEE, 2016) and our [Library and Knowledge Staff Ratios Policy](#) (HEE, 2019b). HEE introduced policy recommendations on [Learning Space](#) (HEE, 2020a) early in the pandemic concerned by the risk that the efficiency with which library teams adapted to remote working, might obscure the important benefits of a physical library. The policy was championed by Postgraduate Medical Deans and has been used successfully by library managers needing to regain space temporarily lost to them.

Regulations: We have worked with colleagues so that the [Education Contract](#) (HEE, 2021c) between HEE and each hospital providing placements for healthcare students reinforces the importance of our policy statements, and sets out requirements on promotion of the clinical decision support tool, submission of information returns and in relation to funding levels.

Generating evidence: HEE commissioned a ground-breaking health economics study of the value proposition for NHS knowledge and library services. The [Gift of Time](#) presents a powerful case, identifying the benefits of these services and of specialist roles embedded within healthcare teams (HEE, 2020b). The findings suggest that NHS library teams already deliver a net economic benefit of £77m per annum - without taking into account the value of improvement to patient care, safety and operational efficiencies (HEE, 2020b).

With an eye to the future, HEE sponsored the CILIP research report on the impact of AI, machine learning, automation and robotics on the information profession. The findings inform our planning to enable the NHS knowledge services workforce of today and tomorrow to thrive in the digital era. In [response](#), (HEE, 2021d) we have commissioned CPD led by [Library Carpentry](#) (2022), and are collaborating on the development of a healthcare data science programme. Computational sense, digital skills, algorithmic literacy will be essential if the profession is to help meet the goals of the NHS in our digital age.

What we are planning for the future?

The primary drivers identified to achieve our overall goal are published in Knowledge for Healthcare 2021-2026 (HEE, 2021a, p.23):

Figure 2. Overarching driver diagram, Knowledge for Healthcare 2021-26



We continue to focus on advocacy to influence decision-makers, using evidence and data persuasively, and to collaborate with partners. We assure the quality of NHS libraries and continue to reach to employers, promoting the Gift of Time (HEE, 2020b) to encourage further recruitment and role redesign to increase the number of qualified librarians, especially in embedded roles (HEE, 2019b). For staff and students across the NHS in England, we will be working with local teams to extend service provision, improve efficiency, streamline services and promote the benefits of NHS knowledge services while also strengthening the digital infrastructure and promoting digital knowledge resources procured nationally.

Building capability, confidence and capacity is essential if we are to fully deliver on our objectives. This involves: upskilling health professionals to share 'know-how', adopt and spread innovation and better mobilise evidence from research; equipping healthcare staff, information providers and citizens to improve levels of health literacy; and ensure health knowledge specialists are trained to embrace new technologies to meet information needs. We want to get better at using data from knowledge services, including digital services to drive service improvement, and at using evidence and metrics to inform decision-making.

We recognise the importance of funding. HEE is committed to achieving equitable and sustainable funding for NHS library services, irrespective of the setting in which staff are based. Long recognised as a complex issue (NHS, Executive 1997), the introduction of a fair formula for the distribution of HEE education tariff, based on workforce and trainee numbers, is high on our list of aspirations. Additionally, we want to encourage employers to further invest in these services so that the NHS can maximise the expertise of knowledge specialists.

Finally, we see the need for a coherent approach to knowledge interoperability. We believe that this decade offers significant opportunities to work with partners on a concerted, system-wide effort to enable interoperability to better mobilise computable knowledge, and move knowledge into practice. This requires strategic leadership and coordination.

Conclusion

Focused on action to enhance and sustain a coherent national approach, the *Knowledge for Healthcare* strategy embodies a long-term and complex programme of work aiming to deliver HEE's vision for NHS knowledge and library services.

Service improvement is all about the people. We want to continue to value, celebrate and sustain our professional community for it is this, the expertise and commitment of knowledge specialists and library teams, that will sustain the coherent national approach to delivering Knowledge for Healthcare: mobilising evidence, sharing knowledge, improving outcomes.

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Health Literacy using SMS/WhatsApp at Paediatrics Specialist Clinics in Lagos: Clinicians' perspective

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Abstract:

Introduction

Information communication is an integral part of human life. Effective communication is a crucial component in all stages of health care provision. SMS/WhatsApp messages used in paediatrics specialist clinics provide new innovative opportunities for patient follow-up and strengthen doctor-patient communication.

Objectives of the study

To ascertain the usefulness of SMS/WhatsApp messages by paediatricians as follow-up tools at paediatrics special clinics in Lagos, Nigeria; to determine if the use of SMS/WhatsApp will enhance clinician's job in controlling the outbreak of infectious diseases and to ascertain if it helps the doctor-patient communication.

Methods

A voluntary online survey was created and distributed to paediatricians in the five (5) paediatrics specialist clinics in General Hospitals in Lagos State, Nigeria, and the Paediatrics Specialist clinic in Lagos State University Teaching hospital (LASUTH) Ikeja, Nigeria. Of the 32 Paediatricians at the special clinic, 30 completed the survey.

Results: The findings revealed that 86% of the respondents were females while only 14% were males. A total of 58.6% of respondents have between 11 to 20 years of clinical experience, and 37.9% are those with 6 to 10 years of clinical experience.

The majority (82.6%) of the respondents run clinics weekly, and 65.5% Sometimes use SMS/WhatsApp to follow up on patients, while 78% Sometimes text to remind/cancel appointments. Meanwhile, 61% have never texted to prescribe the drug and 76.9% have never texted a laboratory result.

However, three quarter 91% Strongly agree that SMS help to monitor patient treatment, 87% Strongly agree that SMS help to control disease outbreak, and 70% Strongly Disagree that patients' information should not be discussed with others.

Conclusion: The use of SMS/WhatsApp for continuous communication between patients and doctors in special paediatrics clinics is essential for quality health care delivery, patient-doctor relationship, and curtailing the spread of diseases.

Keywords: Paediatrician, SMS/WhatsApp, Health literacy, Specialist clinic, Health information communication

Introduction

Information communication is an integral part of human life. Effective communication is a crucial component in all stages of health care provision. Paediatricians provide concise and timely information communication with patients, caregivers, and colleagues to protect patients, save cost, increase efficiency in the workflow, reduce medical errors and reduce patient relapse or readmission. Basic information relating to diagnosis, disease prevention, disease monitoring, self-management, health promotion, improving medical compliance etc., are communicated to patients daily by clinicians (Liu & Li, 2020). Good doctor-patient communication enables the patient to share essential information that will lead to accurate diagnosis, a better understanding of the patient's needs, proper therapy and consequently, reduction of symptoms. Patients are also better informed and adhere to the treatment plan when information is adequately communicated by their doctors.

In the past, doctor-patient communication is done through face-to-face interaction (only on clinic days), however, there is now a gradual transformation in the use of mobile health technology tools by clinicians in promoting health care delivery. Mobile messaging services have been at the forefront in the last decade as a follow-up tool; it enhances the doctor-patient relationship, improve patient sincerity, and speed up the recovery process. SMS/WhatsApp messaging tools are commonly used in developed and developing countries; it is mostly used in Nigeria for simple, fast, and cost-effective communication (Yahya & Yahya, 2019). Short message services (SMS) is messaging application available on all mobile phones, including cheap, low-end handsets, while WhatsApp is a messenger application for smartphones that uses the internet to send text messages. These messaging services can create and transmit information among different users, improving and promoting the delivery of health care solutions. SMS/WhatsApp is now readily adopted into the daily workflow by clinicians for information sharing with colleagues and patients (Benedictis et al., 2019). This was apparent during the COVID-19 pandemic where SMS/WhatsApp became a transparent medium for doctors to educate the patient on prevention and precaution, risk factors, curtailing the spreading of the virus, and appropriate steps in case of symptoms (Barayev et al., 2021). The potential of SMS/WhatsApp message integration as a communication channel between patients and clinicians has been acknowledged globally in the literature but not in Nigeria, especially in paediatrics specialist clinics as a follow-up tool, therapy management, and infectious disease control tool. Studies from Lippoliti and L'Engle (2017) agree that SMS/WhatsApp messages are effectively used to communicate with patients, especially in African sub-region or low-income countries. It is also a preferred channel of communication in case of emergency, or disease outbreaks and mobilises support. Okuboyejo & Eyesan (2015) concluded that SMS/WhatsApp has a clear edge in medication adherence in chronic care; it creates a multi-way interaction between patients and clinicians. Thereby, creating an essential relationship for patient follow up, safe recovery and efficient health care delivery. In a recent development, Lai et al., 2021 conducted a study on the use of short message service (SMS) to reduce outpatient attendance in ophthalmic clinics during the coronavirus pandemic. The study showed that a total of 17,028 SMS were sent out. 14.3% postponed their appointments. The primary reason for the postponement of the meeting was that most patients were concerned about contacting the COVID-19 virus. As a result, 13.9% overall reduction in clinic attendance with high patient satisfaction (96%). Thus, with the increasing pattern of mobile technology usage such as SMS/WhatsApp in the health sector as a communication tool between patient-clinician, face-to-face consultations are reduced, curtailing the spread of infectious diseases.

Therefore, the objectives of the study are to ascertain the usefulness of SMS/WhatsApp messages by paediatricians as follow up tools at paediatrics special clinics in Lagos, Nigeria;

to determine if the use of SMS/WhatsApp will enhance clinician's job in controlling the outbreak of infectious diseases; and to ascertain if it helps the doctor-patient communication.

Methodology Settings/study site

General hospitals in Lagos State, Nigeria state government-owned specialist hospitals spread across the State. Lagos State University Teaching Hospital (LASUTH) is the only tertiary level hospital owned by Lagos State government and is attached to the medical college for the State. Paediatrics clinics are run in both the General hospitals and the teaching hospital. Specialists for a field of medicine are employed to meet the growing demand of the child health care. All government owned hospitals work hand in hand as there are referrals for standardize specialist consultation to the patient. Lagos State is located in the south-western geopolitical zone of Nigeria, and is considered the commercial capital of the country. As the nation's largest urban area, the provision of high quality health care services at all levels to dwellers is crucial.

Study design and population

A descriptive quantitative research method was adopted for this study. The population for this study includes the thirty-two paediatric specialists who work within the Lagos State General Hospital system and LASUTH.

Instrument for data collection

A google form questionnaire was created and used as the survey instrument. The survey instrument contained items on respondents' clinic location and demographic characteristics. The questionnaire assessed respondents' health literacy through SMS/WhatsApp and clinicians' perspectives. Questions were closed-ended with check boxes to choose from Regarding health literacy using SMS/WhatsApp, respondents were asked whether SMS/WhatsApp were used to follow up on patients, text as a medication reminder, text to remind/cancel an appointment, prescribe drug,/adjust medication. Whether they text for a new consultation, text laboratory result, text for management plan, and whether the text in plain language. The clinicians' perspective item includes whether SMS/WhatsApp helps patient treatment monitoring and control of disease outbreak. Whether communication with the patient should be recorded in the patient folder, shared with third parties, whether personal/ work phone is used in sending messages, and whether messages have been mistakenly sent to a wrong number.

Method of data collection

The link to the questionnaire was shared through email and WhatsApp chat explaining the objectives of the study. Potential participants filled the voluntary and anonymous questionnaire. Email/WhatsApp chat were sent three times to all the potential participants. Thirty-two (32) participants were contacted from the six general hospitals (Alimosho, Ifako, Gbagada, Festac, Messay, Isolo,) and one Teaching hospital (Ikeja); however, only thirty (30) respondents from eight specialties (Neonatal, Emergency, Gastroenterology/Nutrition, Endocrinology/Metabolic Diseases, Haematology and Oncology, Nephrology and Neurology and Respiratory and Allergy) completed the questionnaire. Statistical analysis was performed using Microsoft Excel (Microsoft Corp., Redmond, WA, USA) and SPSS software version 20 (SPSS Inc., Chicago, IL, USA) through descriptive statistics.

Result

A total of 30 responses (4 male and 26 female) were received, making 13.3 % and 86.7% respectively. More than 96% of the respondents had over 5 years of working experience as Paediatrician, with the majority (73.3%) working at the Lagos State University Teaching hospital. The demographic characteristics of study participants are presented in *Table 1*.

Table 1: Demographic characteristics of study participants

		Frequency	Percentage %
Gender: (n=30)	Male	4	13.3
	Female	26	86.7
Years of experience as Paediatrician: (n=30)	1-5	1	3.3
	6-10	12	40.0
	11-20	17	56.7
Clinic Location: (n=30)	Lasuth	22	73.3
	Massey	1	3.3
	Mcc Festac	1	3.3
	Alimosho	3	10.3
	Isolo	1	3.3
	Ifako	1	3.3
	Gbagada	1	3.3
Speciality : (n=30)	Neonatal	7	23.3
	Emergency Paediatrics	4	13.3
	Gastroenterology/Nutrition	4	13.3
	Cardiology	3	10.0
	Haematology and Oncology	1	3.3
	Nephrology and Neurology	1	3.3
	Respiratory and Allergy	2	6.7
	Endocrinology/Metabolic Diseases	4	13.3
	Pulmonology	3	10.0
	Infectious Diseases	1	3.3
Clinic days : (n=30)	Once a week	25	83.3
	Twice a week	5	16.7

Health literacy through SMS/WhatsApp

As shown in *Table 2*, the majority of the respondents use SMS/WhatsApp to remind/cancel an appointment with the patient (95.7%), allows the patient to reply to a text (93.3%), text in plain language (90.0%), follow up on patient (82.2%) and adjust prescribed dosage (66.7%). While majority never use SMS/WhatsApp to text medication reminder (76.6%), laboratory result (76.9%), management plan (63.3%) and for new consultation (63.3%).

Table 2. Health literacy through SMS/WhatsApp

	Never	Sometimes	Agree
Use SMS/WhatsApp to follow up on patient	3 (10.0%)	22 (65.5%)	5 (16.7%)
Text as medication reminder	23 (76.6%)	6 (20.0%)	1 (3.3%)
Text to remind/cancel an appointment	1 (3.3%)	24 (78.0%)	5 (16.7%)
Text to prescribe drugs	18 (61.0%)	12 (39.0%)	-----
Text to adjust prescribed dosage	10 (33.3%)	20 (66.7%)	-----
Text laboratory result	13 (76.9%)	7 (23.1%)	----
Text for new consultation	19 (63.3%)	11 (36.7%)	-----
Text management plan	19 (63.3%)	11 (36.7%)	----
Allow patients to reply text	2 (6.7%)	13 (43.3%)	15 (50.0%)
Text in plain language	3 (10.0%)	11 (36.7%)	16 (52.3%)

Clinician's perspective

The result from *Table 3* shows that 94.3% of clinicians agree that SMS/WhatsApp help monitor patient treatment, (90.3%) controls disease outbreak, and (93.3%) communication should be recorded in the patient folder. While about 60% of the respondents reported the use of personal phones for communication, about 83.4% agree to the use of work phones. However, 80.0% disagree with discussing patient information with others.

Table 3. Clinician's perspective

	Disagree	Strongly Disagree	Agree	Strongly Agree
SMS/WhatsApp help monitor patient treatment	1 (3.3%)	1 (3.3%)	27 (91.0%)	1 (3.3%)
SMS/WhatsApp helps control disease outbreak	2 (6.7%)	1 (3.3%)	26 (87.0%)	1 (3.3%)
Mistakenly send message to a wrong number	1 (3.3%)	1 (3.3%)	----	---
SMS/WhatsApp communication should be recorded in the patient folder	----	2 (6.7%)	15 (50.0%)	13 (43.3%)
Use work phone to send message	2 (6.7%)	3 (10.0%)	17 (56.7%)	8 (26.7%)
Use personal phone to send message	3 (10.0%)	9 (30.0%)	15 (50.0%)	3 (10.0%)
Discuss patient information with others	3 (10.0%)	21 (70.0%)	3 (10.0%)	----

Discussion

WhatsApp usage in Nigeria as of the third quarter of 2020 rated 93% of internet users (Varrella, 2021), which account for its usability in all sectors, including the health sector. Similarly, SMS is frequently used in transmitting data on any mobile phone (with or without the internet) and is readily available in remote places, leverage that the message sent will reach the endpoint (Eleanya, 2021). Base on this, SMS/WhatsApp messaging tool was used among other text messaging tools for this study. A number of merit of SMS/WhatsApp messages were highlighted by Guretal, 2017, its cost efficient and convenient for patients, serve as a backup for clinicians in providing targeted intervention to improve adherence to treatment and recommended therapies outcome.

As a specialist in child health care and advocacy, Paediatricians, with years of experience spanning over five years, understand effective and efficient dissemination of information in the workflow. From the first consultation, doctor-patient communication is established and continue through the clinical process to recovery. However, information shared is not only for the patient who is mostly under aged but also for the parent or caregiver who is saddled with the responsibility of adherence to the clinicians' prescription for improved treatment/therapy.

This study identified clinicians' perspectives on using SMS/WhatsApp as a communication tool for patient follow-up, monitoring treatment, and controlling diseases. SMS/WhatsApp reminders have been linked to improved clinic attendance, reduced the number of shows and helped clinicians to plan (Watkins et al., 2018) adequately. Where 94.4% of clinicians reported using SMS/WhatsApp messages as a reminder for appointment adherence, this is in line with a study that shows the utility of text messaging as a reminder for different patients (Lin et al., 2016). Due to personal pressure, parents and caregivers usually fail to keep the date for the next appointment. Effective follow-up process enables properly plan not to miss an appointment, to reschedule an appointment without creating additional work load for clinicians'. Although this study didn't consider the number of reminders sent or the kind of messages sent, clinicians usually asked closed-end questions, which led to yes or no answers from the patient, not considering the clinical issues of missed or rescheduled appointments. Two findings are of note - follow up on patient from doctor and patient are allowed to text back. This gives a feeling of care and personal connection between patient and clinician. This

feeling indirectly improves patient health and promotes medical level. The doctor could be better informed about related diseases, like complications, survival period, and recurrence rate ((Kee et al., 2018, Liu & Li, 2020). Research reports disclosed that text messaging saves 50% of the time from diagnosis to delivery of HIV DNA tests in rural Zambia (Sutcliffe et al., 2017). Patients and parents can be contacted for treatment or to adjust prescriptions within a short period. Globally, the COVID-19 pandemic created a shift towards mobile consultation. SMS/WhatsApp became a transparent medium for doctors to educate the patient on prevention and precaution, risk factors, curtail spreading of the virus, and appropriate steps in case of symptoms (Barayev et al., 2021).

A significant effect is the text language, which could positively or negatively affect the doctor-patient relationship. Texting in plain language could mean a common language well understood by both clinician and patient. An official language is more like it, gives a better understanding to the Language barrier between patient and clinician at a cost on both patients satisfaction and health outcome (Aelbrecht, 2019)

The coronavirus pandemic (COVID-19) has caused a significant shift towards the use of mobile technology for patient-doctor communication across the globe (Barayev et al., 2021). Social distancing measure has been a tool for lowering the risk of patients and clinicians' contacting the virus; consultations with specialists using SMS/WhatsApp has become more essential than ever.

Limitation

This study has a number of limitations; firstly, the Paediatrics specialist clinic was studied, which is only an arm in medicine. Secondly, the evaluation of the message context and the individuals involved in sending the text messages cannot be ascertained.

Lastly, this study was conducted only in Lagos state, Nigeria and many paediatricians from other states in Nigeria are not represented in this study. However, paediatrics clinics faced similar challenges to those in other States, and the researcher hopes that the advantages and disadvantages of using SMS/WhatsApp may also be identical.

Conclusion

The use of SMS/WhatsApp for continuous communication between patients and doctors in special paediatrics clinics is essential for quality health care delivery. It creates a feeling of care and personal connection between patient and clinician. This feeling indirectly improves patient health and promotes medical level Also, It promotes effective doctor-patient communication, strengthens the patient-doctor relationship, improves patient follow-up process, improves clinic attendance, and curtails the spread of diseases.

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Ensuring the effective use of evidence and knowledge to sustain healthcare delivery: the knowledge mobilisation self-assessment tool

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Abstract:

The health service in England is a knowledge business. It relies upon good quality evidence and effective use of organisational knowledge to make informed decisions which impact upon the quality of care and healthcare outcomes for patients. A key theme of the Health Education England Knowledge for Healthcare strategy for NHS knowledge and library services is mobilising evidence and knowledge. This aims for “Healthcare organisations, services and systems to effectively mobilise evidence, learning, knowledge and know-how to enable evidence-based policy and practice”. To enable senior healthcare leaders to identify opportunities to maximise the benefits of evidence and knowledge as business assets, a Knowledge Mobilisation Self-Assessment Tool has been developed. The paper provides a definition of knowledge mobilisation, considers why it is important within healthcare and outlines the vital role of knowledge specialists and librarians to enable healthcare staff to apply and use evidence, build their know-how, continue to learn and drive innovation. Development and function of the Knowledge Mobilisation Self-Assessment Tool is outlined, including how the results can inform creation of a bespoke action plan for organisational teams to develop their use of evidence and knowledge to meet their organisational objectives. The plan may include simple tools and techniques from the NHS Knowledge Mobilisation Framework such as the learning during technique of the After Action Review. The paper concludes by highlighting benefits such as assisting the transfer of knowledge into practice enabling learning health systems, providing assurance that an organisation is committed to using evidence and knowledge to inform decision making, stimulation of knowledge sharing and improving engagement

between the organisation and the knowledge and library service to build structure and capacity for sustainable healthcare delivery based on effective use of evidence and knowledge.

Keywords: Knowledge Mobilisation, Knowledge for Healthcare, NHS, Mobilising Evidence and Knowledge, Knowledge Specialists.

Introduction

The health service in England is a knowledge business. It relies upon good quality evidence and effective use of organisational knowledge to make informed decisions which impact upon the quality of care and healthcare outcomes for patients. Within legislation there is a duty of care upon policy makers, commissioners, and providers of health services to use evidence from research in their decision making (Health and Social Care Act, 2012). Health librarians and knowledge specialists have a critical role using their expertise ensuring that the health service, clinical and non-clinical staff, use evidence and knowledge as an asset.

In January 2021, Health Education England (HEE) published the refreshed Knowledge for Healthcare strategy for National Health Service (NHS) Library and Knowledge Services in England (HEE, 2021) with the strategic ambition:

“NHS bodies, their staff, learners, patients and the public use the right knowledge and evidence, at the right time, in the right place, enabling high quality decision-making, learning, research and innovation, to achieve excellent healthcare and health improvement.”

One of the key themes of this strategy is the focus upon mobilising evidence and knowledge. This work aims for:

“Healthcare organisations, services and systems to effectively mobilise evidence, learning, knowledge and know-how to enable evidence-based policy and practice”

To implement successful change, introduce technological innovation, improve quality of care, and transform services and workforce, the NHS needs to get better at managing information, evidence, and knowledge. These are valuable assets, yet rarely considered at executive board level. Using data and research evidence, sharing know-how and implementing best practice are all business critical.

The knowledge mobilisation self-assessment tool has been developed by Health Education England (HEE, 2021a) to enable senior healthcare leaders to identify opportunities to maximise the benefits of evidence and knowledge as business assets.

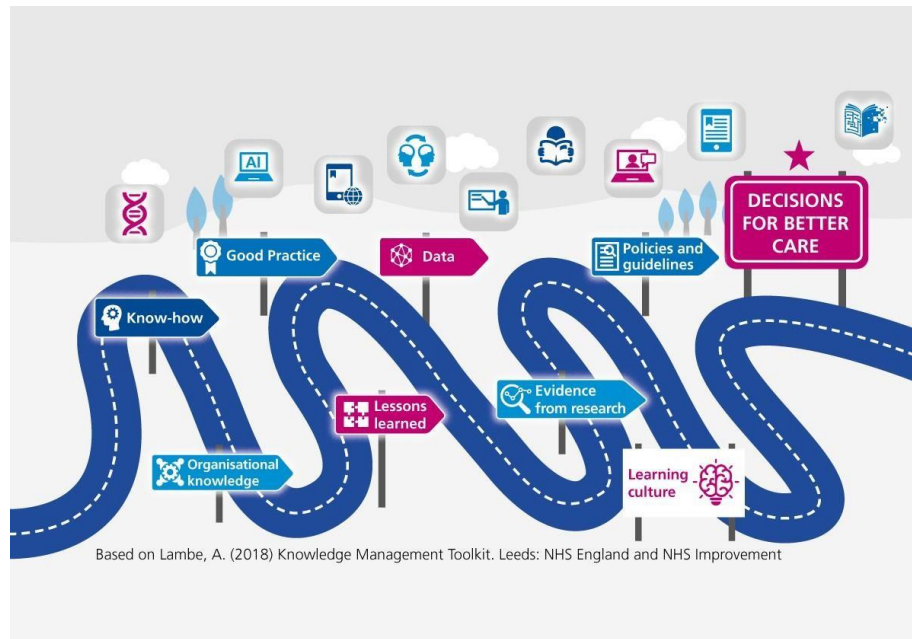
Why Knowledge Mobilisation?

Many terms are used interchangeably to describe knowledge mobilisation: Knowledge management; knowledge sharing; shared learning; learning lessons; connecting people; sharing ‘know-how’; knowledge transfer; spread and adoption; knowledge translation and even evidence-based medicine are just a few terms that are in regular use. The working definition that we have adopted encompasses all of these terms:

KNOWLEDGE: That which is explicit or documented – research, data-sets, guidelines and that which is tacit, the know-how and values held by individuals and within organisations based upon wisdom and experience .

MOBILISATION: Organising and preparing for action - considering how knowledge is to be used to achieve a particular purpose.

Knowledge Mobilisation is about connecting and encouraging people to share explicit and tacit knowledge AND to USE this knowledge to inform their decision making (Day, A. 2021)



Within the easy-read version of Knowledge for Healthcare (HEE, 2021b) this is simply described as “Getting the right information from different places and sharing it” and this “right information” can be from reports, research, the internet and from the things people know but haven’t written down. People can then use this knowledge to help inform their decisions and actions.

Figure 1: Knowledge and evidence mobilisation

Knowledge Mobilisation is also concerned with enabling the use of evidence. Evidence comes in many forms and varying degrees of quality and volume depending on the topic. It is often research published in peer-reviewed journals, or as reports. Evidence based practice emphasises the importance of understanding and applying the evidence taking into consideration other factors including expert knowledge and values. Decisions must take account of the best available evidence and individual and organisational knowledge. Enabling evidence-based practice must consider the capture and mobilisation of knowledge as well as evidence. Knowledge specialists enable decision makers to take account of this full continuum.

The role of knowledge specialists

Knowledge specialists and librarians not only make knowledge resources available and provide training to find and interpret high quality health information, but they act as

knowledge brokers. In this role they pull together intelligence from published evidence, data, examples of good practice and use techniques to discover tacit knowledge – valuable know-how that can so easily be overlooked. They mobilise this knowledge, synthesising and summarising what they have found so it can be used immediately by the healthcare worker, saving their time, informing their clinical and non-clinical decisions, and making a difference to people's lives.

A further specific outcome within the Knowledge for Healthcare strategy is:

“To enable healthcare staff to apply and use evidence, build their know-how, continue to learn and drive innovation.”

Knowledge specialists use their expertise to enable healthcare staff to achieve this. However, a useful first step is to work with healthcare teams within an organisation to identify how well they are already using evidence and organisational knowledge.

What is the Knowledge Mobilisation Self-Assessment Tool?

Launched in 2021, the digital self-assessment tool encourages senior leaders within healthcare organisations to consider how well they are using external evidence and organisational knowledge and assess opportunities to make better use of information, evidence, and knowledge as an asset.

The tool invites senior healthcare leaders to assess what is working well and what more could be done, to consider initiatives which will make a positive impact upon their bottom-line and to prioritise these initiatives and co-create an action plan to help meet key organisational objectives.

The tool consists of a maturity matrix comprising of four sections containing a selection of key criteria exploring leadership, behaviours, capabilities and working practices, and knowledge services. It aligns to the International Standard ISO 30401:2018 Knowledge management systems (ISO, 2018) with a focus particularly upon leadership and commitment, the required behaviours of acquiring and applying new knowledge and the focus upon developing an appropriate knowledge management culture.



Figure 2: Diagram showing sections of the Knowledge Mobilisation Self-Assessment Tool. Alongside each criterion, is an indicator statement and a progression scale from 1 to 12 from which a healthcare team can select the most appropriate statement that best describes the current situation for their team. These range from having nothing in place yet, through to ‘in early stages’ or on to ‘pockets of good practice’ or ‘business as usual’.

For example, within the Behaviours Section there is a criterion about the team approach to innovation. It is then possible to select the statement that best describes the current situation for the entire team from the following:

1 – 3 Nothing in place: There is no process in place to scan and consider innovation (use the innovation example)

4 – 5 In early stages: Teams consider innovations they are aware of

6 – 9 Pockets of good practice: Some teams seek, assess, and adopt innovations

10 – 12 Business as usual: There is an established process to identify, review and adopt innovations

2.3. Approach to innovation - required

There is no process in place to scan and consider innovation			Teams consider innovations they are aware of			Some teams seek, assess and adopt innovations			There is an established process to identify, review and adopt innovations		
1	2	3	4	5	6	7	8	9	10	11	12

Ratings explanation, with examples if you have some:

Figure 3: Diagram showing one of the criteria and associated maturity statements from the knowledge mobilisation self-assessment tool

In a group-facilitated session, with the team working together to complete the tool, there may then be a discussion about the selected statements and the facilitator may ask for examples to support the chosen statement and challenge the team to consider if this is the same for everyone in the team, or across the organisation if this is being completed by an Executive Board. If being completed by individual team members, they have the option to give a rationale for their rating and the scores are aggregated to provide a team mean-average score.

Identifying opportunities from the tool

Once the self-assessment is completed the knowledge specialist can use the results to populate a list of interventions, highlighting a range of tailored services and activities that will help the healthcare team to improve the way they currently use knowledge as an asset to meet their organisational objectives.

Knowledge specialists are presented with a range of pre-populated options from which to choose including the tools and techniques from the NHS Knowledge Mobilisation Framework.

For example, for the approach to innovation criterion knowledge specialists could choose to recommend from the following options:

- Set-up a local innovations forum
- Request an alert to keep up to date with innovations in a particular topic
- Ask for help in using a model to transfer knowledge effectively so innovation can be spread and adopted
- Ask a colleague from the Knowledge and Library Service how you can share the outputs from your latest project or piece of work so learning can be spread
- Use a fishbowl conversation technique to debate hot topics or share ideas and knowledge from a range of perspectives

Or they can highlight other interventions specific to the service or the organisation with which they are working. These options are then presented back to the healthcare team to discuss and prioritise, and work can begin on co-delivering the actions alongside the knowledge and library services team.

The NHS Knowledge Mobilisation Framework

Among the suggested interventions within the self-assessment tool are the thirteen tools and techniques from the NHS Knowledge Mobilisation Framework (HEE, 2018). These straightforward techniques can be easily applied by healthcare staff to capture, share and re-use knowledge and know-how, ensuring that learning takes place before during and after activities.

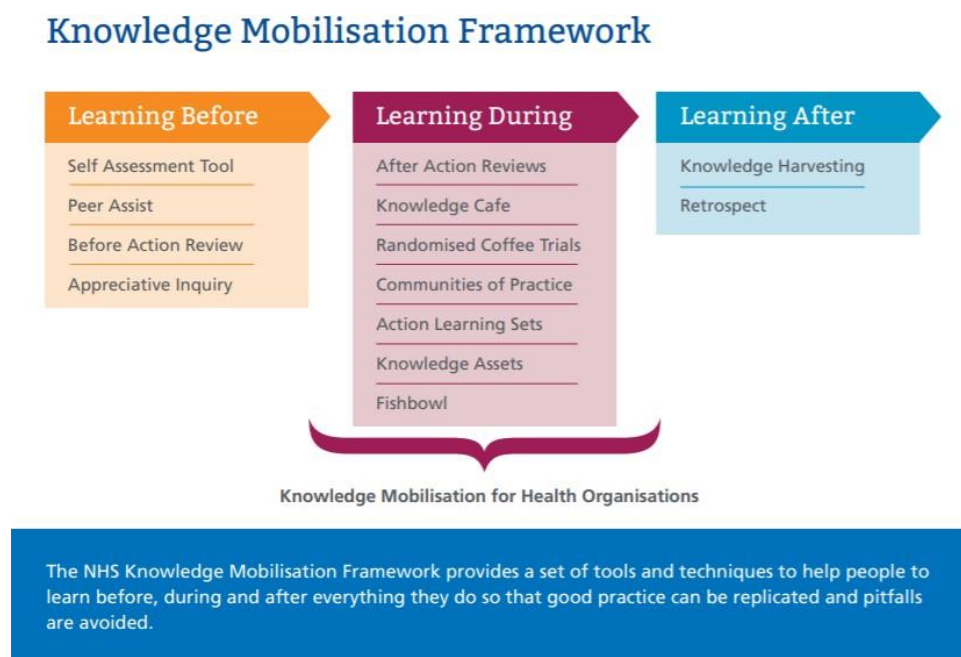


Figure 4: The NHS Knowledge Mobilisation Framework

The tools are presented in a suite of open access E-Learning modules and are available as a set of quick reference postcards. Ranging from simple 15-minute techniques to longer facilitated sessions the techniques lead to the discovery of lessons learned which can be used by healthcare teams to continually improve their work based upon learning from others.

For example, the After Action Review is a learning during technique that can take place at any stage of a piece of work to capture learning to inform and make improvements to a piece of work as it is developing. The technique can take as little as 15 minutes and asks all those involved in the work to pause and reflect by considering four simple questions:

1. What was supposed to happen?
2. What actually happened?
3. Why was there a difference?
4. What can we learn from this?

The aim of the session is to capture lessons learned and share these back with the team to make immediate changes or improvements to the work and share with other teams so they too can improve their work. The most powerful aspect of the After Action Review technique is the focus on learning:

Following an introduction to this technique at a Primary Care Improvers Conference GP Trainer, Appraiser and Coach Dr Farzana Hussain commented:

“I would recommend everyone to learn about this. It has changed my staff meetings and significant-event analyses, the non-judgemental approach supporting a no-blame culture – not bad for four simple questions I learnt in under 20 minutes” (Day, A and Goswami, L. 2020)

Background to development

The tool is based upon the concept of a knowledge management maturity matrix used within British Petroleum (BP) (Collison and Parcell, 2004). This was adapted for the NHS by Library and Knowledge Manager, Rachel Cooke (Cooke, 2015).

One of our key concerns was whether senior leaders within healthcare systems would be willing to spend time using the tool. To explore this, several short Plan-Do-Study-Act improvement cycles gathered feedback from teams using the tool. As a result, small improvements to the wording, layout, and process of using the tool were made. For example, from one of these sessions we adjusted wording to become more inclusive and added a 1 – 12 number scale to make it easier for the team to discuss and agree upon a level of maturity. Following these early tests an early adoption at Surrey and Sussex Healthcare NHS Trust led to a meaningful change in practice whereby librarians were requested to lead on a process for regularly reviewing and maintaining clinical and non-clinical policies. The process involved ensuring divisional policies are fully evidence-based, updated and easy to access. This has led to the Chief of Medicines remarking

“The library team should be our knowledge stewards in the same way as microbiology are the antibiotic stewards for the Trust”

A major refinement to the tool was made in 2021 with the launch of a digital version. This enables the librarian to configure the tool for a particular team and to run the tool either as a facilitated group session or to be completed in survey-format by individual participants. The design of the digital tool is fully accessible and simplifies the process of completion. There is the added functionality that the librarian can develop a bespoke action plan selecting from the pre-populated suggestions and then present this back to the team they are working with. Over time, as more responses are received it is anticipated that benchmarking can be undertaken to compare ratings and identify learning opportunities between teams and organisations or across time periods.

Benefits from using the tool Developing learning health

systems

Learning Health Systems focus upon the continual improvement of healthcare by generating and using knowledge to deliver care (Foley, T et al 2021). At the core of the Learning Health System is the use of data generated from practice and transformed into knowledge. Interventions from the self-assessment tool assist the transfer of knowledge back into practice enabling healthcare organisations to build learning cultures. The self-assessment tool is expected, therefore to contribute to the development of learning health systems where routine use of a range of tools and techniques can “scale-up and speed-up the process of knowledge improving practice... [highlighting that] Library and Knowledge Services in general are becoming more, rather than less, important within Learning Health Systems ” (Foley, T et al 2021 p 29)

Providing Assurance

Introduction to the tool starts with a question derived from the Information as an Asset report (CILIP/KPMG 2019) that acts as a hook to encourage senior leaders to complete the tool:

“How can you be assured that you are using external evidence and organisational knowledge effectively?”

The need for the health service in England to learn and govern faster in the digital age was a key message from the launch of this revisited and revised Hawley Report. It highlights the significant business opportunities and potential risks of not giving due consideration to the potential benefits of considering information. Within the self-assessment tool this has been expanded to include consideration of the business benefits of information, evidence and knowledge.

Use of the self-assessment demonstrates that healthcare organisations are committed to using evidence and knowledge to inform their decision making. In turn, this provides assurance to governing boards, regulators and patients, that the organisation routinely considers the use of evidence and knowledge to sustain healthcare outcomes and healthcare improvements. This will become increasingly important as the proposed updated Health and Social Care Act will place a duty upon newly forming Integrated Care Boards to ensure the use of evidence from research in their decision making.

Stimulate knowledge sharing

The tool encourages healthcare teams to pause, reflect and consider how they are using evidence and knowledge. Over time, it is expected that the results from the tool can be used to capture and share good practice taking place across an organisation or healthcare system. When several teams complete the tool, it is possible to compare results to identify where there are strengths. One team can talk to another team to learn how they have developed and adapt this local good practice and apply in their own team. This will become a means to identify areas for development and spot opportunities for one team to learn from the good practice of another in small incremental steps, breaking down silo-working.

Engaging with the knowledge and library service

Successful knowledge and library services need to successfully engage with senior stakeholders to fully understand and align library services to address current organisational priorities. The knowledge mobilisation self-assessment tool is a means to launch a dialogue

between knowledge specialists and senior leaders. It provides an opportunity to demonstrate how knowledge and library services can contribute to achieving organisational goals. By stimulating discussions about evidence and knowledge senior stakeholders begin to recognise the value of knowledge as an asset to the organisation and in turn the role of librarians to deliver this.

Conclusion

Using the knowledge mobilisation self-assessment tool provides organisations with a way of assessing how well they are using knowledge as an asset. It gives them an opportunity to engage with NHS knowledge and library services to work together to build structure and capacity for sustainable healthcare delivery. To create a culture where learning healthcare systems flourish based upon effective use of evidence and knowledge.

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Knowledge for Healthcare:

promoting knowledge

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Abstract:

A skilled knowledgeable workforce in appropriate numbers is a key element in the success of every business and this is certainly the case for NHS knowledge and library services in England. The healthcare workforce relies on knowledge and library specialists skills for evidence searching and summaries, knowledge mobilisation, health literacy skills development and more. Health Education England's knowledge and library services team is responsible for workforce planning and development for this highly specialist profession and anticipates challenges with supply and recruitment over the next decade.

This paper highlights factors such as the workforce profile, and increased demands, which have been identified as contributing to the challenge. It explores some of the interventions which have been developed to mitigate the effects and provide solutions to these challenges.

The importance of working in partnership to tackle areas of common concern is also explored in the paper.

Keywords: Recruitment, planning, workforce, training, development

Health Education England (HEE) is part of the United Kingdom's National Health Service (NHS), and we work with partners to plan, recruit, educate and train the health workforce in England. Within HEE the Knowledge and Library Services team provides strategic leadership for NHS knowledge and library services delivered at a local level across England.

The team works to develop and implement the *Knowledge for Healthcare* strategy 2021-2026 which builds on previous achievements, sets priorities, and informs actions to sustain a coherent national approach to knowledge and library service development in the NHS.

The workforce is the most important element of any business, and this is certainly true of healthcare libraries in England. Therefore, a key strand within the strategy is the need to work towards a sustainable knowledge and library workforce. One of the impact indicators of the strategy reflects this priority:

The knowledge and library services workforce has the capability, confidence and capacity to meet the evolving knowledge and information needs of the healthcare systemⁱ

There are two main elements involved in achieving this goal of a sustainable workforce. The first is around numbers, ensuring that there are sufficient appropriately qualified staff in the workforce and available for recruitment when vacancies arise. The second is around providing a range of focused and high-quality learning opportunities to ensure that the workforce is able to continually refine and improve their skills to meet the changing needs of healthcare.

The focus of this paper is to outline Health Education England's approaches to these challenges and detail some of work we have undertaken in these areas with partners including the UK's Chartered Institute of Library and Information Professionals (CILIP).

It might be useful here to note HEE's definitions around qualified knowledge and library professionals. HEE recognises qualified members of staff to be those who are either in possession of a degree or postgraduate qualification from a CILIP accredited course from a Higher Education institution or who have followed CILIP's professional Registration process and achieved Chartership of Fellowship status with the organisation. The latter ensures that the profession remains open to the increasing numbers of colleagues who have followed non-traditional routes into the profession.

Challenge 1: An ageing workforce

HEE undertakes a biennial survey of the NHS knowledge and library specialist workforce in Englandⁱⁱ and this survey includes a question relating to age.

Data from the 2019 survey indicates c. 42% of the health library and knowledge services workforce is aged 50 and over and therefore likely to attain retirement age within the next fifteen years, assuming an average retirement age of 65. This does not factor in early retirements or staff leaving to take up information roles outside the NHS, or staff working beyond the age of 65.

Based on likely retirement levels over the next fifteen years, we estimate that around 309 qualified knowledge and library specialists will need to be recruited during this period to maintain the existing workforce levels.

Challenge 2: Anticipated increased demand

The Topol Review, published in 2019 outlined recommendations to ensure the NHS is the world leader in using digital technologies to benefit patients. It identified the need to implement technologies such as genomics, digital medicine, artificial intelligence and robotics at a faster pace and on a greater scale than anywhere else in the world. It included the recommendation:

“To plan for the future workforce over the next two decades, the NHS will first have to increase the numberof clinician, scientist, technologist and knowledge specialist posts with dedicated, accredited time, with the opportunity of working in partnership with academia and/or the health tech industry to design, implement and use digital, AI and robotics technologies.”ⁱⁱⁱ

Projected demand for knowledge specialist roles is anticipated to grow with HEE recommending NHS employers increase their staffing ratios to employ 1 qualified knowledge specialist for every 1,250 healthcare staff.^{iv} If this were to be implemented in full this equates to an additional 294 WTE new knowledge specialist posts across England.

The demand for the skill set of this group of staff is expected to increase. The drivers for this include the need to enable knowledge management and mobilisation activities, health and digital literacy, and the increased requirement for data management skills. We would expect many of these roles to be embedded to work closely alongside and as part of the wider multi-professional healthcare team.

At present most knowledge and library roles within the NHS in England are hosted within Acute Hospital Trusts. However, we also observe a slow increase in demand for knowledge manager roles within the Arm's Length Bodies of the NHS and anticipate a demand linked to Social Care and Primary and Community Care.

Taken collectively the figures above suggest a demand for around 600 new qualified knowledge and library professional roles within the NHS in England over the next 15 years.

Health Education England's Response

Health Education England's Knowledge and Library Services team have taken a range of actions in response to this concern.

1) Working with Higher Education Institutions offering accredited courses in Library and Information Science

A basic awareness of health librarianship as a career can be an obstacle. Efforts have been made to increase awareness of knowledge and library roles within the NHS by working with Higher Education Institutions in England offering CILIP accredited courses in library and information studies.

The offer to students has varied depending on preferences of the course organisers and has included supporting full modules on health librarianship such as the one offered by Manchester Metropolitan University covering:

- Overview of Healthcare and Health Libraries
- Quality and Impact Measures in Health Libraries
- Clinical, Outreach, and Embedded Librarianship
- Mobilisation of Evidence and Knowledge
- Health Literacy and Patient Information

Courses offered by other Higher Education Institutions incorporate a shorter two-hour session covering similar topics but in less depth.

Although the longer-term success of this approach has yet to be formally evaluated, there is some anecdotal evidence for this approach yielding results with several former students from these courses taking up roles within health libraries after graduation.

2) Apprenticeships Level 3 and 6/7

Following the introduction of the Apprenticeship Levy in 2017 by the UK Government apprenticeships have become more widespread throughout the NHS. The Levy, which consists of a 0.5% charge on all organisations with a pay bill of £3 million or above per annum, encourages a commitment to Apprenticeships by employers as they can use this Levy to fund their own Apprenticeship training or else lose the Levy costs. Apprenticeships are popular with employees as a means to learn on the job while earning a wage. Apprentices develop and learn while undertaking a paid role. By the end of the apprenticeship they will have a good mix of knowledge and skills, as well as experience, to progress in their chosen career.

Health Education England has worked with CILIP on the introduction of a Level 3 Apprenticeship for Museums, Libraries and Archives, with apprentices employed at a range of NHS Knowledge and Library services. HEE has worked with managers hosting some of these apprenticeship roles to understand how to better support employers and apprentices within this specialist field.

Health Education England is also part of an employer-led trailblazer group developing new apprenticeship standards for a degree level apprenticeship for the profession. It is anticipated that the three-year Level 6/7 apprenticeship will become available in September 2023 with the first cohort leaving the programme in 2026.

Although this work will therefore not yield results until 2026, it is crucial for HEE to continue to support the development of this apprenticeship as we anticipate many new professionals will join the healthcare knowledge and library workforce through this route.

3) NHS Health Careers

NHS Health Careers^v is the information service about the range of 350 plus careers available in the health service. The aim is to support people in education and at all stages of their career to discover more about the health roles that are available, and how to get in and get on. Health Education England's Knowledge and Library team has worked with NHS Careers to ensure that the information available on the website about knowledge and library specialists is accurate and up to date, including real life examples of NHS knowledge and library roles and incorporating current live job opportunities within healthcare.

The site incorporates the career stories of NHS knowledge and library specialists to provide an insight into the roles outlined. This is supplemented by a series of Resources for Role Redesign^{vi}, presented both as a resource for employers and prospective employees to enable them to see the wide variety of roles available within the healthcare knowledge and library field and appreciate the knowledge and skills required for these roles.

The aim of this work is to improve the discoverability and highlight the positive impact of healthcare knowledge and library roles, encouraging more people to follow a career as a healthcare library and knowledge specialist.

In addition to attracting new professionals into the healthcare sector, there is also a need to ensure that the existing workforce is supported in terms of learning and development opportunities.

4) Professional Knowledge and Skills Base (PKSB)

The CILIP Professional Knowledge and Skills Base^{vii} (PKSB) charts the skills and knowledge areas required for those working in the information, knowledge, library and data professions. It is a tool which can be used to aid career development and identify training needs to assist in planning learning and development opportunities.

Health Education England worked with CILIP in 2020-21 to sponsor a refresh of the PKSB to ensure it reflects those competencies and skills required for the modern knowledge and library specialist workforce. A key driver and reference source for the work was the *Research Report: The impact of AI, machine learning, automation and robotics on the information profession*.^{viii} The report considers how new and emerging digital and data technologies are already impacting the daily work of healthcare information professionals, or will be likely to impact in the near future. The research highlighted a set of skills and competencies that information professionals will need to support their users and organisations to meet new and emerging ways of working.

Health Education England also had representation on the working group which refreshed the PKSB and the associated Healthcare Sector Guide, which places the generic skills into the context of healthcare knowledge and library work.

The PKSB is made available to knowledge and library specialists working in the NHS in England to aid their continuing professional development and learning and is used by the Health Education England team to plan and map learning opportunities.

5) Workforce Survey and Development Needs Analysis

Health Education England's knowledge and library team has a role in providing opportunities to develop the highly specialist knowledge and library workforce. In particular we are keen to respond to learning requirements associated with our Knowledge for Healthcare strategy, or associated with service improvement and aligned with the NHS Knowledge and Library Services Quality and Improvement Outcomes Framework. This ensures value for money by targeting resources most effectively.

Our main means of regular consultation with NHS knowledge and library staff is through the biennial Workforce Planning and Development Survey which incorporates a Development Needs Survey. The survey is anonymous and aimed at all healthcare knowledge and library staff in England. It is made available online for participants and advertised through a range of our regular communication channels with participants usually being allowed one month to respond.

Combined with input from Subject Matter Experts, Senior Stakeholders, and observation of service needs from quality reviews and visits, the results of these surveys inform the provision of centrally-funded short courses, e-learning, and other development opportunities.

6) NHS Knowledge for Healthcare Learning Academy

Launched in December 2021, the NHS Knowledge for Healthcare Learning Academy brings together the range of development opportunities offered by HEE's national knowledge and library services team informed by the regular development needs survey and accredited by the professional body CILIP.

HEE has provided targeted learning and development offers for knowledge and library specialists for a number of years and this latest development builds on this long tradition offering continuing professional development (CPD) for health librarians across the country and offering the following benefits:

- Enabling enhanced visibility and accessibility
- Strengthening the existing offer through robust processes
- Increased clarity over learning outcomes and course content
- Added value through accreditation by our professional body
- Increased confidence of employers and other stakeholders

Accreditation is a particularly valuable element of the new Learning Academy offer. Through accreditation both employers and learners can feel confident that the short course content offered by HEE is high quality and has been tested against the professional standards by an independent assessor. As such, accreditation provides a quality assurance measure for employers and learners taking up the offers.

7) Postgraduate Diploma in Clinical Data Science

As part of Health Education England's extensive work to support the development of data, digital and technology capabilities across the entire healthcare workforce, the University of Manchester has been commissioned to develop a flexible series of postgraduate modules in clinical data science. Taken together these modules can lead to a postgraduate qualification in Clinical Data Science.

The modules in development now will cover: Machine Learning for Health, Biostatistics for Health, Health Data Sciences, Introduction to Programming in Health and an Introduction to Health Informatics.

In order to ensure the relevance of these modules for NHS knowledge and library specialists, and to identify opportunities to address any gaps in provision, Health Education England has funded a part time position for an experienced library manager to work with the team developing the modules.

Once launched there is also an intention to provide support for NHS knowledge and library specialists wishing to study on these modules.

Future Priorities

There is much work still to do to ensure that we are able to meet the demands for knowledge and library specialists in healthcare over the coming decades.

One area for development includes providing a programme of learning for those joining the NHS from other sectors. NHS knowledge and library specialists require a specific skill set which may not have been fully developed in other roles. These include expert searcher skills, a knowledge of critical appraisal, knowledge mobilisation techniques, and health literacy skills. The development of a range of learning opportunities to meet the needs of colleagues new to health librarianship is key both to support new professionals but also to encourage colleagues who may wish to transition from other sectors.

There may also be opportunities to support colleagues who wish to transition from administrative or paraprofessional roles to professional knowledge and library roles. Many of these colleagues will have considerable experience providing a range of services within healthcare knowledge and library services or be newly qualified via the Level 3 apprenticeship route. As more administrative processes are rationalised or become automated, assisting some of these staff to transition to professional roles will ensure their valuable experience and expertise is retained.

During 2022 Health Education England will be working with partners to explore a range of opportunities to grow and expand the knowledge and library specialist workforce to ensure that we can meet the demands of the future NHS.

Conclusion

Health Education England's Knowledge and Library team recognises the challenges faced in terms of recruitment and development of the knowledge and library workforce, and the key importance of this work in ensuring that the knowledge and evidence needs of the NHS are met in an effective and efficient manner.

This paper outlines some of the work already undertaken to address these challenges and notes some of the priorities for future work in this area.

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*THE EDUCATIONAL NEEDS FOR HEALTH LIBRARIANSHIP IN UNIVERSITIES OF EAST, CENTRAL
AND SOUTHERN AFRICA (ECSA) REGION*

A Research Report

By

Maria G.N. Musoke (formerly, Chair of IFLA HBS Standing committee: 2015-2019)

*With support from Patrick Sekikome, Emma Farrow, Shane Godbolt & C. Kanyengo On behalf of the IFLA
Health & Biosciences Libraries Section (HBS) Standing Committee*

ICML Sub-theme 5.3: Capacity building through Education and Training

Extended abstract

The IFLA Health and Bio-Sciences (HBS) Libraries project was informed by its Open Session theme in 2015 that was “Career-long learning for the health information professional”. A paper, presented from Kenya, highlighted a shortage of African health/medical librarians, the changing health information environment, gaps in the Library and Information Science (LIS) curriculum in most institutions in the East, Central and Southern Africa (ECSA) region, among others.

The HBS Standing Committee (SC) prepared a project proposal and submitted it to IFLA Governing Board; this was approved as part of its 2017/18 Action Plan with the aim of addressing the challenges highlighted in the paper. The proposal was designed with activities that included (a) a research project to identify the education and training needs for health librarianship in the LIS institutions in the ECSA region; (b) presentation of the research findings at the biennial Standing Conference of East, Central and Southern Africa Librarians (SCECSAL) in 2018 and conducting follow up interviews and discussion with key informants during that SCECSAL; (c) preparation of a report focusing on (a) and (b) and submitting it to IFLA; (d) holding a one-day workshop with Deans and Directors of LIS schools in the region during the SCECSAL 2020 to share the research findings and discuss a way forward; and finally (e) engage LIS institutions in the region using social media to provide support by HBS SC whenever needed. This executive summary is for the report of activities (a) and (b).

After the approval of the project by IFLA, a questionnaire was designed by two members of the HBS SC who later engaged a LIS professional as a research assistant. The questionnaire was pre-tested at Makerere University and the necessary changes were made. The final version was then emailed to 37 institutions within the ECSA region that had been identified from an Internet search. Fourteen (14) institutions responded to the questionnaire which was 37% response rate (the accepted international rate for emailed questionnaire is 10-15%).

The findings revealed that 43% (6) of the institutions that responded were offering a health/medical information and related courses, whereas 57% (8) did not have such courses. One of the six institutions offered the course at a Certificate level, four at a Bachelor's level and one at a Master's level. The LIS institutions running PhD programmes reported that some students' PhD theses/dissertations focused on health information and related topics and some lecturers do research on such topics. The institutions provided copies of Course outlines for health information and related courses and indicated aspects that needed to be added, for example, Legal aspects of health information, Health Records organisation and storage, Ethics in handling health records, Major information sources on health prevention and promotion. There were challenges experienced by institutions offering the health information and related courses that included shortage of academic staff with appropriate specialization and learning materials. The Institutions without a health information course generally indicated that it was an oversight that could have been caused by limited demand for the course. Among these institutions, three had plans of introducing the health information course whereas five did not. The institutions expected professional support from the IFLA HBS particularly in terms of guidance on appropriate curriculum for health information and related courses, staff training, establishment of an online platform for sharing information, and encourage LIS schools to have health information and related courses. The key issues identified were the need for staff training and regular review of programmes as an important element of curriculum development. These were discussed with the key informants during SCECSAL, 2018 and the findings are part of this report. Some areas for further research are also outlined at the end of the report.

The full Report is available at:

<https://public.3.basecamp.com/p/mbG4nfDuvwkkv8ZLP7mUBMqM>

The logo is a red speech bubble with a yellow border. Inside, the text 'ICML' is in large yellow letters, 'AHILA' is in white letters on a red background, 'SOUTH AFRICA' is in yellow letters, and '— 2022 —' is in yellow letters.

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