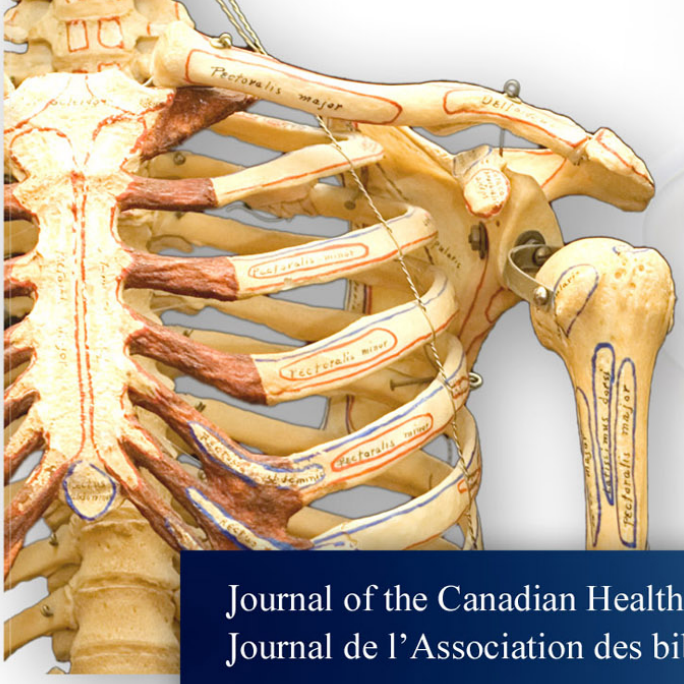

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DEPARTMENTS / DÉPARTEMENTS

Editor's Message

Greetings from JCHLA/JABSC's new Editor-in-Chief! As I step into this role after two years as Junior Editor and then Senior Editor, I would like to thank my two predecessors, Vicky Duncan and Sophie Regalado. Under their stewardship, this journal has evolved tremendously. There has been growth in peer-reviewed research articles and development of new article types such as product reviews.

In this issue, we are very excited to bring you the Canadian results from the National Network of Libraries of Medicine's Value of Library and Information Services in Patient Care Study (Bartlett and Marshall, p. 138). In an age where hospital libraries and even academic health sciences libraries are being subjected to closures and cutbacks, this study makes a compelling case for the continued importance of health sciences libraries to patient care.

Over the next year, we continue to take JCHLA/JABSC in new directions. Our next issue (35-1) will be our first theme issue with guest editors. It will be devoted to the topic of Aboriginal health information. Our guest editors are Jim Henderson, who brings many years of experience in health libraries, including work with aboriginal health information; and Jessie Loyer, the Indigenous Studies librarian at Mount Royal University in Calgary and a member of the Michel First Nation in Alberta.

The editorial team will also be looking into the application process for adding JCHLA/JABSC to PubMed Central and MEDLINE. This is quite an involved process, but one that will make our journal a more attractive publishing venue. We have heard from members that a journal's inclusion in MEDLINE is often an important factor in deciding where to submit an article. However, I would note that we face a chicken-and-egg situation here. To be added to PMC and MEDLINE, we are required to meet NLM's Scientific Quality Standard. That means we need a strong body of peer-reviewed research to include in our application. I would encourage our membership to support and strengthen your journal by considering JCHLA/JABSC as the first destination for your research. Even though we are not in MEDLINE, we are indexed in CINAHL and the major library literature databases, as well as in Google Scholar and, of course, we are open-access. Our Google Analytics numbers tell us that we are attracting an increasingly international readership.

Message de l'Éditrice

Salutations distinguées de la part de la nouvelle rédactrice en chef du JABSC/JCHLA! Au moment de prendre la relève à ce poste après avoir occupé pendant deux ans celui de rédactrice adjointe et celui de rédactrice principale, je tiens à remercier les deux personnes qui m'ont précédée, soit Vicky Duncan et Sophie Regalado. Sous leur gouverne, ce journal a évolué de façon impressionnante. Les articles révisés par les pairs se sont accrus et de nouveaux types d'articles tels que la révision de produits se sont développés.

Dans le présent numéro, nous nous réjouissons de vous offrir les résultats pour le Canada du classement selon l'étude du « National Network of Libraries of Medicine's Value of Library and Information Services in Patient Care Study (Bartlett et Marshall, p. 138) ». En ces temps où les bibliothèques en centre hospitalier et même les bibliothèques des sciences de la santé subissent fermetures et compressions budgétaires, cette étude s'avère incontournable et souligne l'importance des bibliothèques des sciences de la santé en ce qui concerne les soins aux patients.

Au cours des années à venir, nous continuerons à explorer de nouvelles avenues pour le JABSC/JCHLA. Notre prochain numéro (35-1) sera le premier numéro thématique faisant appel à la contribution de rédacteurs invités. Il sera centré sur l'information en santé des autochtones. Nos rédacteurs invités sont pour l'occasion Jim Henderson, qui nous fera bénéficier de ses nombreuses années d'expérience au sein des bibliothèques de la santé, ainsi que de son travail en information sur la santé des autochtones; ainsi que Jessie Loyer, bibliothécaire en études indigènes de l'Université Mount Royal de Calgary et membre de la Michel First Nation en Alberta.

L'équipe éditoriale se penchera aussi sur le processus de demande d'ajout du JABSC/JCHLA à PubMed Central et MEDLINE. Il s'agit d'un processus relativement complexe, mais dont la réussite fera de notre journal un véhicule de publication des plus attrayants. Nos membres nous ont fait valoir que l'inclusion d'un journal à MEDLINE est souvent un facteur déterminant pour la soumission d'un article. Cependant, je crois personnellement que nous faisons face ici au dilemme de la poule et de l'oeuf. Pour un ajout à PubMed Central et à MEDLINE, nous devons respecter les normes de qualité scientifique de la NLM (National Library of Medecine). Ce qui veut dire qu'il nous faut une solide équipe de recherche révisée par les pairs à inclure à notre demande d'ajout. J'encourage donc en ce sens tous nos membres à appuyer et à renforcer notre journal en considérant comme tout premier véhicule de

As always, the JCHLA/JABSC editorial team welcomes your ideas, comments and contributions. Get in touch with us at editor@chla-absc.ca.

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publication le JABSC/JCHLA pour leur recherche. Même si nous ne sommes pas inclus à MEDLINE, nous sommes indexés dans CINAHL et faisons partie des bases de données de documentation des principales bibliothèques. Nous sommes aussi présents dans Google Scholar, et il va sans dire, nous sommes en libre accès. Nos chiffres selon Google Analytics nous indiquent que nous attirons un nombre croissant de lecteurs internationaux.

Comme toujours, l'équipe éditoriale du JABSC/JCHLA accueille avec grand intérêt vos idées, vos commentaires et vos contributions. N'hésitez pas à communiquer avec nous par courriel: editor@chla-absc.ca.

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ANNOUNCEMENT / COMMINIQUÉ

ABSC–CHLA 2014 Conference Announcement

Coming off a strong conference in Saskatoon, let's keep the momentum going by telling you about the exciting program for the ABSC–CHLA conference in Montreal!

A stimulating week of "scaling new heights together" is being offered to the ABSC–CHLA community on 16–20 June 2014. Join fellow librarians in an exchange of ideas and expertise during the day, while experiencing one of Montreal's wonderful festivals, FrancoFolies, in the evening, just a hop, skip, and a jump from the conference venue!

Stay updated at chla-absc.ca/conference for all the exciting conference details. Or, visit us on the CHLA facebook group (https://www.facebook.com/CHLA.ABSC) or our Twitter account, @abscchla14 or at #abscchla14.

Scaling new heights together

As health sciences librarianship is constantly evolving, during the conference we wish to explore as many potential partnerships as possible, including: embedded librarianship in clinical or research settings, interprofessional collaborations, patient-centred care, and aboriginal health.

Invited speakers

- Opening the conference on June 18th is **Dr. Victor Montori**, Director of the Healthcare Delivery Research Program and Knowledge and Encounter Research Unit at the Mayo Clinic. Dr. Montori is an advocate for patient-centered care, where the patient's values and preferences are at the centre of making clinical decisions. He is also a recognized leader of evidence-based medicine, participating as a tutor at the McMaster University Evidence-Based Clinical Practice Workshop.
- Following Dr. Montori's talk, a panel from Université de Montréal (**Marie-Claude Vanier**, Associate Clinical Professor, Faculty of Pharmacy; **Vincent Dumez**, Co-Director, Collaboration and Patient Partnership Direction, Faculty of Medicine; **Éric Drouin**, Director, MD program, Faculty of Medicine; and **Isabelle Brault**, Assistant Professor, Faculty of Nursing) will present the concepts of patient-as-partner-in-care and patient-as-trainer as well as results of projects of patients' involvement in interprofessional collaborative practice education for health sciences students. Ways to involve patients, pitfalls, and key success factors for such initiatives will be explored through an interactive discussion.
- Wrapping up the conference on 20 June is **Dr. Stanley Vollant**, Academic Advisor of the First Nations and Inuit Program at Université de Montréal and also the first aboriginal surgeon in Québec. He initiated Innu Meshkenu, a 5000 km trek to visit First Nations communities in Quebec, Labrador, Ontario, and New Brunswick. Dr. Vollant is a major contributor to the health and well-being of aboriginal communities and advocates for the preservation of traditional medicine practices.

A trendy hotel in a lively neighbourhood

All program sessions will be held at the Hyatt Regency Montréal, the proud recipient of an AAA Four Diamond Award. Relaxing views of the city complement the stylish,

recently renovated rooms, including Wi-Fi high-speed Internet access. You may also enjoy on-site therapeutic spa treatments, an indoor pool, and a sauna.

The hotel is located on Place des Festivals, in the heart of Quartier des spectacles in downtown Montréal, and is connected by an underground walkway to Chinatown, Old Montréal, Place des Arts (Performing Arts Centre), shopping malls, and the Métro transport system.

Montreal, a city unlike any other

Our welcoming committee will be organizing visits to the Grande Bibliothèque and Museum Pointe-à-Callière and will suggest other favorite destinations. For inspiration, visit the website of Tourism Montreal. Latest attractions include the Grevin Wax Museum and Rio Tinto Alcan Planetarium. And of course, Montreal is renowned for its cuisine: you'll find everything from foie gras to poutine (or even a mixture of both)!

There will be so much to see and do . . . Maybe you'll want to extend your stay? The International Jazz Festival and the International des Feux Loto-Quebec will begin the week after the ABSC–CHLA conference!

We look forward to welcoming you in Montreal next spring!

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(La Belle Province)

Présentation de la conférence 2014 de l'ABSC–CHLA

Du 16 au 20 juin 2014, participez à la conférence de l'ABSC–CHLA à Montréal! Ce sera l'occasion pour tous les bibliothécaires de santé du Canada de se rencontrer, de partager leur expertise et de faire le plein d'idées. Une semaine excitante s'offre à vous, avec une programmation extraordinaire le jour et l'un des festivals les plus courus de Montréal le soir, puisque les douzaines de spectacles gratuits du festival des FrancoFolies ne seront qu'à deux pas!

Visitez notre site Web à l'adresse chla-absc.ca/conference/fr pour connaître tous les détails de la conférence. Discutez avec nous via notre groupe Facebook (https://www.facebook.com/CHLA.ABSC) et notre compte Twitter, @abscchla14, et suivez le mot-clic #abscchla14.

Gravir ensemble de nouveaux sommets

La profession de bibliothécaire en sciences de la santé évolue constamment, et nous souhaitons explorer pendant cette conférence le plus d'opportunités de partenariats possible, incluant: les informationnistes en milieu clinique ou de recherche, la collaboration interprofessionnelle, le

patient partenaire des soins et services, et la santé des Premières Nations.

Conférenciers invités

- Lors de la conférence d'ouverture du 18 juin, **Dr Victor Montori** fera la promotion de la notion du patient partenaire, où le patient est une personne progressivement habilitée, au cours de son cheminement clinique, à faire des choix de santé libres et éclairés. Dr Montori est le Directeur du Healthcare Delivery Research Program and Knowledge and Encounter Research Unit à la clinique Mayo. Il est également un tuteur très apprécié des ateliers de pratique factuelle de l'Université McMaster.
- Suite à la conférence du Dr Montori, un panel composé de membres de l'Université de Montréal présentera les concepts du patient partenaire de soins et du patient-formateur, de même que les résultats de projets impliquant des patients dans l'apprentissage de la collaboration interprofessionnelle par des étudiants en sciences de la santé. Le panel sera composé de **Marie-Claude Vanier**, professeure agrégée de clinique, Faculté de pharmacie; **Vincent Dumez**, co-directeur, Bureau facultaire de l'expertise patient partenaire, Faculté de médecine; **Dr Éric Drouin**, directeur, programme de médecine, Faculté de médecine; et **Isabelle Brault**, professeure adjointe, Faculté des sciences infirmières. Une discussion interactive explorera les façons d'impliquer les patients ainsi que les succès de ces initiatives et pièges à éviter.
- Pour terminer en beauté le 20 juin, **Dr Stanley Vollant,** conseiller pédagogique au Programme des Premières nations et Inuits du Québec à l'Université de Montréal et premier chirurgien autochtone du Québec, nous présentera le projet Innu Meshkenu, une marche inspirante de 5000 km qui visite des communautés autochtones au Québec, au Labrador, en Ontario et au Nouveau-Brunswick. La santé des Premières Nations de même que la préservation et la transmission de la médecine traditionnelle seront au cœur de sa présentation.

Un hôtel chic dans un quartier animé

La conférence et les réceptions auront lieu au Hyatt Regency Montréal, fier récipiendaire d'un prix AAA Quatre Diamants. Vous profiterez de chambres au décor moderne, d'une vue époustouflante de Montréal et de l'accès Internet à haute vitesse sans fil. L'hôtel propose un spa, une piscine intérieure et un sauna.

Le Hyatt Regency est situé sur la Place des Festivals, au coeur du Quartier des spectacles et en plein centre-ville de Montréal, et fournit un accès direct et souterrain au Vieux-Montréal, à la Place des Arts, au quartier chinois, à des centaines de boutiques et au réseau du métro.

Montréal, destination incontournable

Notre comité d'accueil organisera des visites à la Grande Bibliothèque et au musée de Pointe-à-Callière et vous suggèrera ses destinations préférées. Pour vous inspirer, visitez le site Web de Tourisme Montréal. Les plus récents attraits touristiques incluent le musée de cire Grévin et le Planétarium Rio Tinto Alcan. Et bien sûr, Montréal est renommée pour sa cuisine: on y trouve de tout, de la poutine au foie gras (ou même un mélange des deux)!

Il y aura tellement à voir et à faire . . . peut-être voudrez-vous prolonger votre séjour? Le Festival International de Jazz et l'International des Feux Loto-Québec débuteront la semaine suivant la conférence ABSC–CHLA!

Nous avons hâte de vous accueillir à Montréal au printemps prochain!

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FEATURE / MANCHETTE

The Value of Library and Information Services in Patient Care: Canadian Results From an International Multisite Study[1]

Joan C. Bartlett and Joanne Gard Marshall

Abstract: Introduction: This paper presents the Canadian results from a larger, international study with the objective of assessing the value of health library and information services and their impact on patient care. **Methods:** Data were collected using a web-based survey of healthcare providers in 13 Canadian hospitals collectively served by four libraries, and data were analyzed statistically using SPSS. The survey centred on a specific, recent, patient care incident for which the respondent had sought information. Follow-up semi-structured phone interviews with librarians at the participating sites provided supplemental data. **Results:** Twelve hundred and thirty-one people from the Canadian sites responded to the survey. Over 70% indicated that their management of the clinical situation changed as a result of the information. Positive changes included advice given to patient or family (48%), choice of drugs (31%), and choice of treatment (30%); adverse events that were avoided included patient misunderstanding of disease (23%), additional tests or procedures (18%), and patient mortality (5%). Results also showed which information resources were used and from where they were accessed. The information resources were valued as much, if not more, than other sources of information such as laboratory reports or medical records. **Discussion:** The results showed that participants perceive health library and information services to be highly valued and reported that their use has a positive impact on a range of patient care outcomes. They also highlighted the preferred information resources and access points among different groups of health professionals.

Introduction

Over the past few decades, a number of studies have investigated the value and impact of libraries and library services in a healthcare context. Although this research has been international in scope, including work from Australia, the United Kingdom, and the United States, there has been little work done in Canada.

In 2007, the National Network of Libraries of Medicine, Middle Atlantic Region (NN/LM MAR) launched a multisite study into the value and impact of health library and information services on patient care outcomes. This paper presents a secondary analysis of data from the four Canadian libraries that participated in that study.

Background

This research builds on a history of research into the impact of libraries, information services, and information resources on patient care. In 1986, King studied physicians, nurses, and other health professionals who had requested information from their hospital library and asked what impact the information would or might have [1]. Almost two-thirds of the participants indicated that they would definitely or probably manage their cases differently based on the information provided by the library. This study, however, did not follow the participants to determine if, in fact, their practice did change.

In 1992, Marshall conducted the Rochester study in response to a need for evidence of the impact of hospital library and information services on patient care outcomes [2]. This landmark study explicitly studied this relationship by asking physicians to request information related to a specific clinical case and to evaluate the impact of that information on patient care. Eighty percent of the physicians indicated that they definitely or probably managed an aspect of patient care differently. Changes in care included: choice of tests (51%), choice of drugs (45%), and diagnosis (29%). The physicians also indicated the adverse events avoided as a result of the information including: patient

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mortality (19%), surgery (21%), and additional tests or procedures (49%). Finally, the physicians rated the information provided by the library more highly than that from other sources such as lab tests, diagnostic imaging, or discussion with colleagues. Since its publication, this work has been a benchmark for demonstrating the value of library and information services in supporting patient care and their positive impact on clinical outcomes. It has been highly cited within both library and information science and medical literature.

Pluye and colleagues investigated the reasons for which physicians sought information from electronic information resources [3]. They identified seven reasons: answering clinical questions or clinical decision-making, fulfilling educational objectives, satisfying curiosity, overcoming memory limitations, sharing information with patients, exchanging information with other health professionals, and managing tasks with other health professionals. This group later studied residents, nurses, and pharmacists, assessing their use of a specific e-resource, which they were instructed to search on a regular basis to find information in support of treatment recommendations [4]. Their findings indicated that in 35% of the situations they described, the information use was associated with positive patient outcomes. These included increased patient knowledge, avoidance of unnecessary interventions, prevention of disease or morbidity, health improvement, and increased patient satisfaction.

In a 2012 survey of Australian health professionals, 83% of respondents indicated that library and information services helped them improve health outcomes for their patients, whereas 76% indicated that the information they received improved their diagnosis or treatment plan [5]. However, the study methodology did not delve into the particulars of the specific health outcomes or changes to diagnosis and treatment plans.

In recent years, there have been a number of smaller scale studies into the use of health information services, including a study of four hospitals in Colorado and Missouri [6] and another focused on American Veteran's Administration hospitals [7].

Other research has focused on specific types of library services such as clinical librarians [8], "just-in-time" services [9, 10], or a particular application of information to support decision-making [11]. Later work by Urquhart and her group was foundational to the research reported in this paper [12].

Beginning in 2007, Marshall and her research group at the University of North Carolina at Chapel Hill revisited the Rochester study on behalf of the National Network of Libraries of Medicine, Middle Atlantic Region (NN/LM-MAR) [13, 14]. In addition to updating the original Rochester study methodology, this new research included a much larger sample. Over 16 000 physicians and nurses from 118 hospitals responded to the survey. The methodology followed a critical incident technique approach, whereby participants responded in the context of a specific clinical case for which they had spontaneously sought and used information. Thus, the findings represent actual clinical practice, without the decision to seek information being influenced by the study methods. In spite of the dramatic changes to the information landscape in the intervening two decades, the findings again demonstrated the value and impact of information services on patient care outcomes. Overall, three-quarters of the participants indicated that they definitely or probably managed the clinical case differently. Advice given to a patient or family was the most common change (48%), followed by choice of drugs (33%), choice of treatment (31%), diagnosis (25%), and choice of test (23%). Key adverse events avoided as a result of the information included: additional tests or procedures (19%), misdiagnosis (13%), adverse drug reaction or interaction (13%), and patient mortality (6%). Participants again rated the information provided by the library as more important than that from discussion with colleagues, lab tests, and diagnostic imaging.

Methods

This paper presents a secondary analysis of data from Canadian sites from the NN/LM MAR study, with a data-sharing agreement allowing the Canadian data to be shared between the UNC research team and McGill University. The original mixed-methods study included focus groups of librarians for planning purposes; a web-based survey of physicians, residents, nurses and nurse practitioners; and a series of follow-up interviews with selected survey respondents [14]. This paper only reports findings from the Canadian participants of the survey (1231 of the 16 122 survey participants were from Canadian sites). This paper also reports on the findings from new data collected through follow-up interviews with librarians from the Canadian sites.

Survey

The first part of the survey asked respondents to identify both their profession (physician, resident, nurse, nurse practitioner, or other) and the type of work their job involved (patient care, management/administration, clinical research, education, or other). Although respondents could select as many work roles as were applicable, only those who selected "patient care" or "clinical research" were able to proceed with the survey. Because the survey was centred around the use of information for clinical care, this requirement was to ensure that participants were more likely to be able to respond to the survey questions. Following a critical incident technique approach [15, 16], the survey then prompted respondents to think "of an occasion in the last 6 months when you looked for information resources for patient care (beyond what is available in the patient record, EMR system, or lab results)"; the remaining questions in the survey were to be answered in the context of this patient case.

Respondents next selected the best description of the primary diagnosis of the patient (from a list of 19 options such as cancer or heart disease) and the type of information (e.g., drug information, therapy information, clinical guidelines) that was needed to answer the question. A set of questions asked respondents about where they obtained the information. This included a list of key health sciences information resources (e.g., Medline, CINAHL, Dynamed, STAT!Ref) generated in consultation with the Value Study

Planning Group; not all sites necessarily had access to all resources, and sites might also have had resources not included in the list. Respondents specified which resource(s) they used, how they accessed the resource (e.g., from an institutional website, personal subscription, asked a librarian), and from where they conducted the information search (e.g., office, library, patient care unit), as well as whether they found the information they needed and which resource(s) that had been searched contained relevant information. A final set of questions asked about the value and impact of the information. This included whether the clinical situation was handled differently as a result of the information, an assessment of the value of the information (e.g., relevance, clinical value, contribution to higher quality care), whether the use of the information led to positive changes in patient outcomes (e.g., reduced length of stay, choice of treatment) or avoided adverse events (e.g., adverse drug reaction, misdiagnosis, mortality), and how valuable the information was considered in reference to other sources such as diagnostic imaging or lab tests. The full survey is available as an appendix to Marshall's 2013 paper [14].

Recruitment and sample

Following initial recruitment of sites from within NN/LM MAR, the study was opened to other sites across Canada and the United States. The study team provided each site with a Facilitator Handbook [14] that detailed the steps in the study and the respective roles of the facilitator (typically the hospital librarian) and the research team. One task of the facilitator was to identify one or more "champions" within the organization who would support and endorse the study within the organization and co-sign the e-mail invitation to participate in the study. Another was to obtain research ethics approval within their own institution, if required. Ethics approval for the multisite study was obtained from the University of North Carolina Institutional Review Board (UNC IRB). The UNC team provided support to the facilitators in the ethics review process as necessary.

The UNC research team managed the registration of sites and provided support to facilitators of all sites that expressed interest in the study. The study planning group members also served as mentors to the site facilitators.

From the library sites that initially expressed interest, four Canadian sites met all the requirements for participation. A number of additional Canadian sites were originally interested but were unable to participate for a variety of reasons. Anecdotal reports suggested that one reason was provincial legislation, which specified that data from healthcare sites could not be stored on servers outside of Canada. Another was the absence of approval from the institution's internal ethics review board.

Following a pilot survey in fall 2010, the full survey was implemented in spring 2011. All physicians, residents, nurses, and nurse practitioners within each participating organization were invited to participate in "a study on the value of information in clinical settings" and advised that their "answers to the survey questions may ultimately help our institution provide better patient care by supporting you with the information you need, when and where you need it" [14].

Follow-up interviews

In the summer of 2013, follow-up interviews were conducted with librarians who facilitated the original survey within their respective hospitals. The semi-structured interview guide focused on two main themes, the librarian's experience as a participant in the study and the impact on their library and practice of the study and its findings. Interviews were conducted by phone and were audio-recorded and later transcribed. The transcripts were analyzed with open coding, to capture the themes that emerged from the perspective of the respondents [17]. Two of the four Canadian librarians who were involved in the study participated in the interviews.

Ethics approval for the interviews, and the secondary analysis of the survey data from the Canadian sites was obtained from the McGill University Ethics Review Board.

Results

The four Canadian libraries served 13 hospitals in three provinces. Seven hospitals had between 101 and 299 beds, four had between 300 and 499 beds, and two had 500 or more beds. All 13 hospitals were located in urban or suburban areas; some hospitals included a teaching role in their function, although they were not all officially designated as teaching hospitals.

Twelve hundred and thirty-one healthcare providers from the various hospitals responded to the survey. As not every respondent answered every question, the total number of responses to some questions may be below 1231. More women (576, 46.8%) than men (336, 27.3%) participated, due in part to the large number of nurses. Table 1 shows nurses and physicians were the largest groups of professionals followed by medical residents and nurse practitioners. Their work involved a range of activities (Table 2). Overall, most respondents were from two broad age ranges; 397 (32%) were aged 25–44 and 459 (37%) were aged 45–64. Almost half the respondents (49.2%) had been in practice for over 20 years, with the next largest proportions having been in practice for 2–5 years (13.8%) and 6–10 years (12.6%).

Information resources used

As specified in the survey, all responses were in the context of a single, specific patient care incident. Within that context, respondents listed all of the information resources they used in response to the clinical information need (Table 3). Overall, the top five were e-Journals (46%), PubMed (45%), e-Books (32%), UpToDate (31%), and e-Medicine (24%). It is interesting to note the selection of resources was not consistent among the different groups

Table 1. Which of the following best describes your job?

Position	No. (%)
Attending physician	371 (32.2)
Resident	135 (11.7)
Nurse practitioner	53 (4.6)
Nurse	507 (44.0)
Other	85 (7.4)
Total	1151 (100)

Table 2. Which of the following does your job involve?*

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
Patient care	1129 (98.4)	370 (99.7)	134 (99.3)	52 (98.1)	501 (98.8)
Managemen/administration	239 (20.8)	166 (44.7)	14 (10.4)	5 (9.4)	35 (6.9)
Clinical research	363 (31.6)	206 (55.5)	69 (51.1)	30 (56.6)	31 (6.1)
Education	559 (48.7)	308 (83.0)	79 (58.5)	34 (64.2)	103 (20.3)
Other	35 (3.1)	10 (2.7)	0 (0)	3 (5.7)	12 (2.4)

*Respondents could select all that applied; therefore, column totals do not equal 100%.

Table 3. Resources used to search for information.*†

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
e-Journals	489 (45.8)	231 (63.6)	64 (48.1)	32 (62.7)	120 (27.0)
PubMed/MEDLINE	484 (45.3)	227 (62.5)	77 (57.9)	27 (52.9)	112 (25.2)
e-Books	347 (32.5)	115 (31.7)	61 (45.9)	13 (25.5)	126 (28.3)
UpToDate	331 (31.0)	155 (42.7)	104 (78.2)	20 (39.2)	39 (8.8)
e-Medicine	257 (24.1)	105 (28.9)	53 (39.8)	17 (33.3)	66 (16.8)
Books (print)	233 (21.8)	87 (24.0)	44 (33.1)	9 (17.6)	79 (17.8)
Journals (print)	16 (12.7)	66 (18.3)	13 (9.8)	7 (13.7)	38 (8.5)
Clinical Evidence	135 (12.6)	54 (14.9)	18 (13.5)	12 (23.5)	41 (9.2)
Micromedex	130 (12.2)	22 (6.1)	15 (11.3)	11 (12.6)	76 (17.1)
Professional association websites	129 (12.1)	37 (10.2)	15 (11.3)	9 (17.6)	54 (12.2)
MD Consult	120 (11.2)	52 (14.3)	21 (15.8)	3 (5.9)	38 (8.5)
OVID Medline	109 (10.2)	48 (13.2)	15 (11.3)	11 (21.6)	25 (5.6)
CINAHL	95 (8.9)	4 (1.1)	1 (0.8)	19 (37.3)	63 (14.2)
Nursing Reference Centre	62 (5.8)	0 (0)	0 (0)	1 (2.0)	57 (12.8)
e-Pocrates	51 (4.8)	27 (7.4)	8 (6.0)	8 (15.7)	5 (1.1)
Consumer health resources	34 (3.2)	9 (2.5)	1 (0.8)	2 (3.9)	19 (4.3)
StatRef	32 (3.0)	18 (5.0)	3 (2.3)	3 (5.9)	4 (0.9)
Essential Evidence Plus	5 (0.5)	2 (0.6)	0 (0)	1 (2.0)	2 (0.4)
Not sure	54 (5.1)	8 (2.2)	0 (0)	2 (3.9)	39 (8.8)
Other	167 (15.6)	40 (11.0)	14 (10.5)	9 (17.6)	91 (20.4)

*Respondents could select all that applied; therefore, column totals do not equal 100%.
†Not all participating sites had all of the listed information resources.

of professionals. UpToDate was highly used by residents (78%) but not as much by the others. By contrast, CINAHL was more highly used by nurses (14%) and nurse practitioners (37%).

For each resource used, respondents indicated how they accessed the resource. Aggregated results are shown in Table 4. Overall, the institution's library website or intranet were the most highly used (46% and 45%, respectively), closely followed by general Internet search engines (40%). Although there was a preference for electronic resources, the institution's physical library was used by almost one-fifth of the respondents. The librarian was also an access point for information (17%) and was consulted more frequently than colleagues (12%).

Respondents also indicated where they were physically located when they conducted the search for information (Table 5). Overall, the patient care unit (50%) and the office (46%) were the most common locations, though the most commonly cited location varied by profession. Physicians most often searched from their office (71%), whereas a similar proportion of nurses searched from the patient care unit (70%). Interestingly, although the library was only listed by 13% of respondents overall, over 30% of residents indicated that they conducted or requested the search from the library.

Value and impact of information

Respondents assessed the information by indicating whether or not they agreed with a number of statements regarding the information (Table 6). The statements addressed four areas: quality of the information (e.g., the information was relevant), its cognitive value (e.g., the information provided new knowledge), its contribution to quality patient care (e.g., the information was of clinical value), and time saved. Assessment of the information was overwhelmingly positive; overall, agreement ranged from 78% to 100%. In most cases, 90% or more of the respondents agreed with the statements. The lowest level of agreement was with the statement that the information saved time, with an overall score of 78%.

In terms of the impact of the information, respondents were asked whether or not they handled the clinical situation differently as a result of the information (Table 7). Overall, over 70% of respondents indicated that they definitely or probably handled the situation differently. Results from physicians, residents, and nurse practitioners were relatively

Table 4. Access to the information resources used.*

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
Institution's library website	495 (46.5)	219 (60.5)	99 (74.4)	32 (64.0)	107 (24.1)
Institution's intranet	475 (44.6)	146 (40.3)	55 (41.4)	29 (58.0)	215 (48.4)
Search engine such as Google	430 (40.4)	136 (37.6)	53 (39.8)	25 (50.0)	184 (41.4)
Personal/departmental subscription	270 (25.4)	137 (37.8)	45 (33.8)	12 (24.0)	60 (13.5)
Institution's physical library	200 (18.8)	78 (21.5)	43 (32.3)	9 (18.0)	58 (13.1)
Patient's electronic medical record	194 (18.2)	75 (20.7)	27 (20.3)	10 (20.0)	70 (15.8)
Asked a librarian	185 (17.4)	79 (21.8)	21 (15.8)	15 (30.0)	52 (11.7)
Bookmarked website	151 (14.2)	66 (18.2)	20 (15.0)	11 (22.0)	41 (9.2)
Mobile device	131 (12.3)	67 (18.5)	33 (24.8)	9 (18.0)	13 (2.9)
Asked a colleague	124 (11.7)	31 (8.6)	9 (6.8)	8 (16.0)	66 (14.9)
Another library	97 (9.1)	51 (14.1)	11 (8.3)	7 (14.0)	20 (4.5)
Spouse's or friend's subscription	24 (2.3)	9 (2.5)	5 (3.8)	2 (4.0)	6 (1.4)

*Respondents could select all that applied; therefore, column totals do not equal 100%.

Table 5. Physical location from which search was conducted or requested.*

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
Patient care unit	511 (50.3)	113 (32.5)	68 (53.5)	14 (29.2)	298 (70.4)
Office	470 (46.3)	248 (71.3)	41 (32.3)	40 (83.3)	98 (23.2)
Home	322 (31.7)	166 (47.7)	67 (52.8)	8 (16.7)	64 (15.1)
Library	125 (12.3)	44 (12.6)	39 (30.7)	2 (4.2)	31 (7.3)
Other	34 (3.3)	11 (3.2)	4 (3.1)	2 (4.2)	12 (2.8)

*Respondents could select all that applied; therefore, column totals do not equal 100%.

Table 6. Agreement with statements about the information used.*

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
1. Quality					
Was relevant	951 (99.5)	345 (100.0)	121 (100.0)	47 (100.0)	377 (99.0)
Was accurate	924 (98.4)	340 (99.1)	115 (98.3)	47 (100.0)	364 (97.8)
Was current	910 (96.1)	338 (98.5)	117 (96.7)	46 (97.9)	351 (93.9)
2. Cognitive value					
Refreshed memory of detail or facts	81 (92.6)	304 (95.3)	111 (96.5)	41 (93.2)	306 (88.7)
Substantiated prior knowledge or belief	806 (92.3)	296 (92.8)	111 (93.3)	42 (97.7)	307 (90.8)
Provided new knowledge	836 (89.4)	300 (89.3)	113 (94.2)	42 (91.3)	327 (88.1)
3. Contribution to quality patient care					
Was of clinical value	926 (97.3)	340 (99.1)	119 (99.2)	46 (95.8)	363 (95.8)
Resulted in better informed clinical decision	814 (93.3)	320 (96.4)	112 (96.6)	44 (95.7)	287 (88.6)
Contributed to higher quality of care	822 (92.8)	316 (96.0)	111 (94.9)	44 (95.7)	299 (88.5)
Will be of use in the future	916 (98.0)	333 (98.2)	120 (100.0)	46 (97.9)	361 (97.3)
4. Time					
Saved me time	644 (78.5)	242 (77.8)	90 (80.4)	36 (85.7)	241 (78.8)

*Numbers represent the number of respondents who answered the individual question. Percentages refer to the percent who agreed with the individual statement (e.g., the information was of clinical value)

Table 7. Did you handle the clinical situation differently?

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
Definitely yes	262 (26.3)	117 (33.6)	43 (34.7)	18 (37.5)	67 (16.3)
Probably yes	450 (45.1)	164 (47.1)	55 (44.4)	22 (45.8)	175 (42.5)
Probably no	245 (24.5)	59 (17.0)	21 (16.9)	7 (14.6)	145 (35.2)
Definitely no	41 (4.1)	8 (2.3)	5 (4.0)	1 (2.1)	25 (6.1)

consistent. For nurses, the responses were mostly "probably yes" (42%) or "probably no" (35%).

The impact of the information was further detailed with questions regarding specific patient care outcomes. Table 8 shows the responses to the question of whether any of a set of outcomes changed in a positive way as a result of the information. Overall, "advice given to patient or family" was the most cited outcome (48%); an even greater percentage of nurse practitioners (69%) indicated this change. Overall "choice of drugs" and "choice of treatment" were indicated by 31% and 30% of the respondents, respectively.

In addition to documenting positive changes to patient care outcomes, respondents also indicated whether any negative or adverse events were avoided as a result of the information (Table 9). "Patient misunderstanding of disease" was the most cited adverse event that was avoided (22%). As with the "advice given to patient or family", this response was also most indicated by nurse practitioners (40%). Other adverse events that were avoided included "additional tests or procedures" (18%), "adverse drug reaction or interaction" (12%), and "medication error" (9%). Perhaps most significant from a human standpoint, 49 respondents (5%) indicated that "patient mortality was avoided as a result of the information".

Finally, respondents evaluated the information resources provided by the library along with other sources of information that are also involved in patient care. Table 10 shows the number of respondents who rated an information source as either "important" or "very important" on a four-point scale. Overall, the information resources that respondents had used (listed in Table 3) were rated highly by more respondents (96%) than the other three categories of "discussion with colleagues" (90.6%), "laboratory tests" (82.9%), and "diagnostic imaging" (77.1%).

Table 8. Did any of the following change in a positive way as a result of the information?*

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
Advice given to patient or family	458 (48.4)	155 (45.3)	59 (48.0)	33 (68.8)	178 (48.0)
Choice of drugs	295 (31.2)	145 (42.4)	65 (52.8)	27 (56.2)	48 (12.9)
Choice of treatment	280 (29.6)	148 (43.3)	36 (29.3)	20 (41.7)	63 (17.0)
Handled the situation differently	194 (20.5)	67 (19.6)	26 (21.1)	14 (29.2)	77 (20.8)
Diagnosis	192 (20.3)	105 (30.7)	46 (37.4)	11 (22.9)	21 (5.7)
Choice of test	168 (17.8)	89 (26.0)	46 (37.4)	14 (29.2)	15 (4.0)
Post-hospital care or treatment	109 (11.5)	41 (12.0)	17 (13.8)	6 (12.5)	38 (10.2)
Reduced length of stay	58 (6.1)	20 (5.8)	12 (9.8)	2 (4.2)	20 (5.4)

*Respondents could select all that applied; therefore, column totals do not equal 100%.

Table 9. Were any of the following events avoided as a result of the information?*†

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
Patient misunderstanding of disease	209 (22.5)	63 (18.8)	31 (25.6)	19 (40.4)	81 (22.3)
Additional tests or procedures	164 (17.7)	83 (24.8)	35 (28.9)	13 (27.7)	21 (5.8)
Adverse drug reaction or interaction	114 (12.3)	51 (15.2)	17 (14.0)	10 (21.3)	29 (8.0)
Misdiagnosis	98 (10.6)	54 (16.1)	21 (17.4)	8 (17.0)	7 (1.9)
Medication error	87 (9.4)	29 (8.7)	16 (13.2)	2 (4.3)	35 (9.6)
Patient mortality	49 (5.3)	22 (6.6)	9 (7.4)	1 (2.1)	13 (3.6)
Hospital re-admission	37 (4.0)	12 (3.6)	5 (4.1)	4 (8.5)	13 (3.6)
Hospital admission	31 (3.3)	17 (5.1)	4 (3.3)	2 (4.3)	7 (1.9)
Surgery	29 (3.1)	12 (3.6)	7 (5.8)	1 (2.1)	6 (1.6)
Language and (or) cultural misunderstanding	23 (2.5)	7 (2.1)	1 (0.8)	0 (0)	13 (3.6)
Hospital acquired infection	22 (2.4)	3 (0.9)	3 (2.5)	1 (2.1)	11 (3.0)
Regulatory non-compliance	11 (1.2)	5 (1.5)	2 (1.7)	0 (0)	4 (1.1)

*Respondents could select all that applied; therefore, column totals do not equal 100%.
†The percentage represents the proportion who answered "yes" to the items. All "no", "not applicable", and missing values were coded as "no".

Table 10. Please rate the importance of the information you received from different sources.

	Overall (%)	Physician (%)	Resident (%)	Nurse practitioner (%)	Nurse (%)
Information resources	833 (96.1)	307 (95.9)	110 (98.2)	46 (100.0)	319 (94.9)
Discussion with colleagues	730 (90.6)	246 (85.1)	103 (92.8)	40 (95.2)	295 (93.4)
Lab tests	559 (82.9)	215 (80.1)	86 (86.0)	34 (91.9)	196 (82.7)
Diagnostic imaging	456 (77.1)	194 (78.9)	77 (85.6)	22 (75.9)	138 (69.7)

Note: Items assessed on 4-point scale as follows: 1 = not at all important; 2 = not very important; 3 = important; 4 = very important. Results show the number (and percentage of those who assessed each item) of those who rated a source as "important" or "very important".

Follow-up interviews

Librarians whose libraries and institutions participated in the study received a summary of the study findings in PowerPoint format, as well as the dataset of survey results that they could further analyze. One focus of the interviews was to understand whether the individualized study results were of benefit. Librarians from two of the four Canadian sites participated in the interviews.

Both librarians found their involvement in the study to have been a positive experience, with potential or actual positive outcomes for the library. One benefit was the identification of the individual resources that healthcare providers served by the library chose to search in response to a clinical information need. Rather than only considering aggregate results, it was considered valuable to make an explicit link between the use of library-based resources and the impact on patient care outcomes within the institution.

> "*Having the data individual for each hospital is huge.... For me, mine came back in such a way that it became the marketing tool. So I was real real thrilled to get such positivity out of mine." (Librarian 2)*

The results of the survey were considered useful and valuable to the librarians in advocating for the library and library services within the larger institution and in demonstrating the value of the library. This benefit was manifested in different ways depending on the circumstances of the individual libraries. In one case, the library currently enjoyed strong institutional support; therefore, there was not an immediate need to further advocate for the library. However, the librarian stressed that this type of support could not be taken for granted and that having data explicitly showing the link between the library and its services and positive patient care outcomes would be essential to ensuring the library's ongoing support and continued success.

In the other case, the library and broader institution were involved in changes, and the study findings had a much more concrete impact. The librarian was able to use the results of the study to demonstrate the value and importance of the library to new people, particularly those in senior administration, who didn't already know about the library or value its services. The study findings were also successfully used to support the replacement and upgrading of library staff.

The librarians also discussed some of the challenges they encountered during the survey and their suggestions for future research. One challenge was the absence in some hospitals of a comprehensive e-mail distribution list. This meant that some staff might have missed receiving a direct invitation to participate in the research. One alternative approach was to post notices in common areas, such as at the nursing station, informing staff about the research and providing a link to the web survey. These challenges in reaching staff may have had a negative impact on the response rate.

> *"... challenge is that not every nurse ... actually has an e-mail so reaching the nurses was the hardest group and we had to put a link on our intranet page and direct people to that link because there's no group e-mail to e-mail all of the nurses." (Librarian 1)*

Another challenge mentioned was in obtaining an accurate count of the number of staff. In some multisite institutions, an individual may work at more than one site. Depending on how the institution manages its staffing records, this could lead to staff being double counted, thus artificially lowering the measure of the response rate.

One suggestion for future research was to expand the scope to include those who, while not directly providing patient care, do have an influence on patient care outcomes. The example was given of nurse managers who might still search for and use information to affect patient care through activities such as establishing departmental policy.

> *"We have five that are master level prepared nurses that do nothing but work on patient flow. They've actually assigned people managerial roles and taken them off the floors so that they can actually make the length of stay shorter and at the same time make it a good patient outcome, because your floor nurse hasn't got time. (Librarian 2)*

Another comment was that the original survey did not necessarily include all of the specific resources held by the library. It was suggested that future surveys might include a list of resources customized to match the holdings of individual participating libraries.

Discussion

Overall, the results of this study showed that hospital library and information services have a positive impact on patient care outcomes, with outcomes of their use including the avoidance of death. The findings from the Canadian sites were consistent with those of the full multisite study. However, of more interest is the fact that these recent findings were not inconsistent with those of other studies, including for example, the Rochester study of 1992. So, although the information landscape has changed remarkably over the past two decades, the value of health libraries and their services remains strong.

In spite of the increase in the number and range of specialized information resources, three of the top five most used resources (e-journals, e-books, and MEDLINE) were quite conventional, albeit in digital format. Even print books and journals were among the top seven. One reason for this may be that these resources are ubiquitous; other resources might not have been held by all participating libraries. However, the results also suggested that traditional resources are still valuable and useful. Likewise, the library or the institution's websites were the most frequently used access points for the information, again reinforcing the value of the library. Although the physical library was used less that 20% of the time, this does not suggest that the library is declining in value. Rather, it was shown that the library continues to reach and serve the users through digital means. It is also noteworthy that the librarian was specifically cited as a source of information and more highly ranked than colleagues.

The results also showed variations among the different groups of health professionals, perhaps reflecting variations in the scope of their practice and their responsibilities. The results from the nurse practitioners sometimes were similar to physicians or residents (e.g., managing the clinical situation differently, outcomes such as choice of drug or treatment), whereas in other cases results were more similar to nurses (e.g., accessing resources via the intranet). Variation was also seen for the physical location from which the search was conducted or requested and the resources used. These findings could be applied to targeting resources and services to ensure that healthcare providers are able to access the information they need, where they need it. For example, because nurses most often searched or requested information from the nursing station using the intranet, libraries should ensure that resources are accessible in this way.

This study relied on the respondents' recall of a particular patient care situation and their management of it. Although the critical incident technique does mitigate the problem of recall bias, it is still possible that respondents would have selected an incident for which the use of information affected their management of the clinical situation. As such, it is unclear to what extent these results can be generalized to all clinical situations. At the same time, those who did not have a successful search or information use experience may also have chosen to respond to the survey to document an unsatisfactory situation.

These results showed a small snapshot of the value and impact of library and information services on patient care outcomes in Canadian hospitals. However, these four libraries with the 13 hospitals they serve are not representative of the full Canadian healthcare system. Additionally, American findings are not necessarily generalizable to the Canadian context. For this reason, we plan a follow-up study of a broader sample of Canadian healthcare libraries and institutions; by following a similar study design to the NN/LM MAR study, the goal is to recruit a broader sample from across Canada. The sample should reflect the linguistic, geographic, and health system difference across Canada, including among other factors: urban–suburban–rural settings, provincial–territorial health systems, and specialist versus general settings.

Conclusions

This research showed that within the participating hospitals, library and information services were highly valued, and their use had a positive impact on a range of patient care outcomes. Understanding the information resources used, and the preferred means of access, will allow libraries to deliver services and resources to address the varied needs of different segments of their user populations. Ultimately, by ensuring health professionals have access to the information they need when and where they need it, positive patient care outcomes will be supported.

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FEATURE / MANCHETTE

Library Usage Habits of First- and Second-year Medical Students at a Satellite Campus: Report on an Exploratory Questionnaire[1]

Jackie Phinney

Abstract: Introduction: Anticipating the information needs of undergraduate medical students can be challenging, especially within the context of distributed medical education at a satellite campus. The purpose of this study was to evaluate how first- and second-year medical students in the Dalhousie Medicine New Brunswick program are using their satellite campus' library services and if they would prefer to use their home institution's electronic collection as opposed to print collections from the satellite campus library. **Methods:** First- and second-year medical students were asked to complete a paper survey towards the end of their academic year, which focused on background information, study habits, access preferences and tendencies (print book vs. electronic), satisfaction with their physical library space and collection, as well as their likelihood of completing required course readings. **Results:** Although both groups actually used electronic books more than print, the first-year class stated a preference for print books. Overall students were satisfied with their physical library's services, but were less likely to borrow a book if it is on course reserve. **Discussion and Conclusions:** When providing library services to undergraduate medical students, it is important to note that their opinions and needs can evolve quickly and be unpredictable. Librarians should consider maintaining a print collection while transitioning to electronic, in keeping with the trends of academic health librarianship.

Introduction

According to the Association of Faculties of Medicine of Canada, "satellite campuses are commonly referred to as regional campuses and can be situated relatively close to the parent university or at a considerable distance" [1]. In September 2010, the Dalhousie University Faculty of Medicine welcomed its first class to the Dalhousie Medicine New Brunswick (DMNB) satellite campus, located at the University of New Brunswick Saint John (UNBSJ). While attending DMNB, approximately 30 students in each year spend the first two years of the undergraduate curriculum in the classroom and clinical skills settings with Dalhousie-appointed instructors, whereas the last two years are spent throughout the province on distributed clerkship rotations.

Because of the distance between campuses, all efforts have been made to ensure that the Dalhousie Medicine campus in Halifax and the Saint John satellite campus remain comparable, and guaranteeing library services is no exception. In Saint John, the print medical collection is housed at the UNBSJ campus library; the Hans W. Klohn Commons (HWK Commons). This includes all titles designated as reference, reserve, or allocated to the main collection. One librarian, who monitors the collection at the Halifax campus and ensures that the two are comparable, oversees the collection in Saint John. Students access their electronic materials via the Dalhousie Libraries web site using WorldCat catalogue or Novanet (a consortium of Nova Scotia institutional libraries), but they also retain access to all of the University of New Brunswick's electronic and print items via WorldCat should they wish to use them. Although the librarians at both campuses recognize the value of electronic access, not all course materials are currently available in this format.

Circulation reports of the print reserve collection at the UNBSJ campus library have demonstrated low usage statistics since the program's implementation, with one such example being a print-only textbook for the Foundations 1 unit that had four charges since being added to the collection in 2011.

As user preferences and habits continue to evolve, recent literature on medical students' information use indicates mixed preferences for print versus electronic books. Lasserre et al. surveyed Australian medical students on their information use and found that 59% of the respon-

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dents across all years preferred print over electronic [2]. Hartel and Cheek made a similar discovery in surveying medical students, staff, and faculty in an academic medical centre, with the results showing that print format of books was most popular when compared with web-based books and e-books pre-installed on a device [3]. They also found that "participants noted frustrations adapting to different [e-book] provider platforms and stated a desire to have both print and web-based books available". However, participants also noted that they prefer using print books when reading large amounts of text but carrying large books is an inconvenience.

Such findings would suggest that the usage statistics of the UNBSJ campus library's reserve collection should be higher for the DMNB students, particularly given the close proximity of the DMNB building to the HWK Commons building (directly next door). Therefore, in considering the UNBSJ library's statistical evidence as well as the electronic book collection available to the students through Dalhousie, the librarian decided to investigate the students' library usage, in particular their preferences versus habits in using print and electronic textbooks. In conducting this project, the librarian did not seek to prove a hypothesis. Instead, what began as an exploratory project provided some interesting findings that can speak to health librarianship and its role in the provision of services to medical students.

Methods

A paper survey containing 10 multiple-choice questions (with an 11th question for those who answered "true" to question 10) was drafted by the librarian as well as a letter explaining the purpose of the project. Questions were closed-ended, but two questions allowed space for students to explain their choice in answering "other". The survey was administered on paper and in person to ensure a higher response rate within a small sample, as the librarian acknowledged the students' high volume of university-related email and anticipated fewer replies to an online survey. The targeted respondents were the entire first- and second-year classes at DMNB (Med 1 and Med 2; $n = 60$ students). The third-year class was on clerkships throughout the province for eight months at the time of the survey; therefore, it was predicted that their use of the library would be remarkably different from the students still completing lecture-based coursework in Saint John.

Addressing different factors that may be influencing book access was key; therefore, the questions began by asking background information on the student, which progressed into questions about their study habits such as the average number of hours per week spent on schoolwork and their preferred location to study. The remainder of the survey focused on areas such as their preference and tendencies when choosing print versus electronic books, and if they found the UNBSJ library easy to use (and were likely to borrow a book if it is on reserve). Students were also asked if they had encountered a time when they needed a book and neither Dalhousie nor UNBSJ libraries had it, and if so, how often has this happened as well as the likelihood of completing required readings (see Appendix A for the survey). The survey and letter were submitted to the University of New Brunswick Saint John's Research Ethics Board and were approved by them as well as Dalhousie University.

First- and second-year DMNB students were notified prior to their weekly group tutorial sessions that their librarian would be visiting them with a short survey. The librarian arrived in advance of the sessions and solicited the help of the four session tutors in distributing the surveys and letters. The librarian tabulated answers using Microsoft Excel and percentage values were calculated. It was not anticipated that students would include handwritten notes on their survey papers, but some students did. These comments were also taken into account in the analysis, as such notes provided additional insight when interpreting the results.

Results

Twenty-nine students in the first-year class were asked to respond to the survey, and 28 completed surveys were returned (one student left quickly at the end of the tutorial session). Thirty-one students in the second-year class were targeted and all participated. All data came from the survey results, which have been reported according to content themes with corresponding question numbers:

Background information (questions 1 and 2)

All respondents in the Med 1 class ($n = 28$) and in the Med 2 class ($n = 31$), reported their year correctly. The majority of students in both classes possessed a Bachelor's degree before entering medical school, some held a Master's degree and one Med 1 student had earned a Doctorate (Table 1).

Study habits and preferred location (questions 3 and 4)

Students were asked to indicate the number of hours spent on coursework each week outside of scheduled class time. In the Med 1 group, the same number of students selected 9–12 hours (39%; $n = 11$) and 13 or more hours (39%; $n = 11$). Within this group, most students (71%; $n = 20$) stated a preference for studying at home (Table 2). No Med 1 students reported studying at the hospital next door or selected "other", but one student wrote a note stating that they preferred the DMNB building more than home and another specified the exact location in the library where they studied (quiet reading room). Some students chose more than one answer for this question, thereby skewing the percentage values.

Of the Med 2 group, most students indicated high numbers of extra time spent on coursework, with 39% ($n = 12$) choosing 9–12 hours, and 51% ($n = 16$) selecting 13 or more hours. Of the Med 2 students, 71% ($n = 22$)

Table 1. Background information of respondents.

Education achieved before medical school (question 2)	Med 1 ($n = 28$)	Med 2 ($n = 31$)
Bachelor's degree	75% ($n = 21$)	84% ($n = 26$)
Master's degree	21% ($n = 6$)	16% ($n = 5$)
Doctoral degree	4% ($n = 1$)	0% ($n = 0$)

preferred to study at home (Table 2). As with the first-year class, no one selected "other" and some students offered more than one answer.

Access preferences and tendencies (questions 5 and 7)

Students were asked to indicate how they prefer to access books for coursework as well as to check all that apply for how they actually do so (Table 3). In the Med 1 class, 10% ($n = 3$) indicated their access tendencies with "other", and they described using journal articles, the Internet, or not having accessed a book at all. The Med 2 data also included "other" ($n = 2$), specifically other books online or students sharing PDF versions of books. One Med 2 student also included a note saying that the library's two-hour reserve period is insufficient.

When given the choice between electronic or print books, one of the Med 1 students gave a supplementary answer stating that "PDFs are just better" and chose neither of the given options as an answer.

Library ease of use and borrowing reserve items (questions 6 and 9)

The survey respondents were asked how easy it is to locate and (or) borrow books from the UNBSJ library, including the likelihood that they will borrow something if it is on course reserve (Table 4). Both Med 1 and Med 2 indicated that it is easy to locate and (or) borrow books, although 18% ($n = 5$) of the Med 1 class deemed this question "not applicable" or in one student's response, "don't do". Of the Med 2 class, 19% ($n = 6$) felt that this question was "not applicable". These answers were not given as an option, and students chose to write this on their survey instead of answering "true" or "false".

Students expressed their likelihood of borrowing a book if it is on course reserve, with one Med 2 student stating that "either way I probably wouldn't bother" when given a choice between "true" or "false". In the Med 1 group, one respondent left this question blank.

Collection satisfaction (question 10)

When asked to answer "true" or "false" to encountering a time when a book was needed for coursework and neither Dalhousie nor UNBSJ's library had it, over half of the students answered "true" (Table 5). Of this group, most students (Med 1 = 56%; Med 2 = 75%) indicated that this has only happened "a few times".

Required readings (question 8)

When asked to indicate the likelihood of completing a required reading, both classes answered "sometimes" as the majority response (Med 1 = 75%; Med 2 = 61%), while a minority do the required readings "always" (Med 1 = 21%; Med 2 = 39%). Only one of the Med 1 students reported "never" doing required readings, and none of the Med 2 class reported this.

Discussion

The purpose of this study was to investigate how the Med 1 and 2 students at DMNB's satellite campus are using their physical library services, and if they would prefer accessing course textbooks electronically through

Table 2. Study habits (number of extra hours spent on coursework) and preferred location to study.

Question	Med 1 ($n = 28$)	Med 2 ($n = 31$)
Number of extra hours spent on coursework (question 3)		
1–4 hours	4% ($n = 1$)	0% ($n = 0$)
5–8 hours	18% ($n = 5$)	10% ($n = 3$)
9–12 hours	39% ($n = 11$)	39% ($n = 12$)
13 or more hours	39% ($n = 11$)	51% ($n = 16$)
Preferred location to study* (question 4)		
Home	71% ($n = 20$)	71% ($n = 22$)
DMNB building at UNBSJ campus	18% ($n = 5$)	23% ($n = 7$)
UNBSJ's library	25% ($n = 7$)	3% ($n = 1$)
Hospital	0% ($n = 0$)	10% ($n = 3$)
Other	0% ($n = 0$)	0% ($n = 0$)

*Values do not equal 100%

Table 3. Access preferences and tendencies of course textbooks.

Question	Med 1 ($n = 28$)	Med 2 ($n = 31$)
Book access preference (question 7)		
E-book	43% ($n = 12$)	65% ($n = 20$)
Print copy	54% ($n = 15$)	35% ($n = 11$)
Supplementary	3% ($n = 1$)	0% ($n = 0$)
Book access actual* (question 5)		
E-book through Dalhousie	89% ($n = 25$)	97% ($n = 30$)
In person through UNBSJ	21% ($n = 6$)	13% ($n = 4$)
Purchased books	46% ($n = 13$)	64% ($n = 20$)
Hospital library	0% ($n = 0$)	10% ($n = 3$)
Other	10% ($n = 3$)	6% ($n = 2$)

*Values do not equal 100%

Table 4. Library ease of use and borrowing reserve items from the library.

Question	Med 1 ($n = 28$)	Med 2 ($n = 31$)
UNBSJ library ease of use (question 6)		
True	53% ($n = 15$)	58% ($n = 18$)
False	29% ($n = 8$)	23% ($n = 7$)
Supplementary n/a	18% ($n = 5$)	19% ($n = 6$)
Less likely to borrow a reserve item (question 9)		
True	46% ($n = 13$)	65% ($n = 20$)
False	50% ($n = 14$)	32% ($n = 10$)
Supplementary	0% ($n = 0$)	3% ($n = 1$)
Left blank	4% ($n = 1$)	0% ($n = 0$)

Table 5. Collection satisfaction with either institution

Question	Med 1 ($n = 28$)	Med 2 ($n = 31$)
Needed a book and neither Dalhousie nor UNBSJ had it (question 10)		
True	64% ($n = 18$)	52% ($n = 16$)
False	36% ($n = 10$)	48% ($n = 15$)
If "true", how often?		
Only once	44% ($n = 8$)	19% ($n = 3$)
A few times	56% ($n = 10$)	75% ($n = 12$)
Happens a lot	0% ($n = 0$)	6% ($n = 1$)

the Dalhousie Library's web site versus in print format at their satellite campus library. This study did not seek to prove a hypothesis and was intended as an evaluation of library usage since the program's recent implementation. However, noteworthy findings did emerge from the returned questionnaires and are represented here by class.

The Med 1 class demonstrated that their preferences did not match their actual tendencies, as the results showed that they would rather use a print book when in actuality they are not. This was surprising considering the timing of the survey and the number of months ($n = 8$) that would have allowed them to find their study style. However, other results indicated that it may just be a strict schedule combined with convenience. The majority of students indicated that they preferred studying at home, so although it would be ideal to have the print version of a book it may not always be a readily available option for them. This could also be affected by the library reserve policies in place, as it was noted through supplementary commentary that the two-hour loan period is insufficient. When evaluating the UNBSJ library's services, the Med 1 data indicated that most students found the library easy to use. Therefore, when pairing these results with the data showing that the majority of students were only "sometimes" doing their required readings, one might argue that their busy schedules are influencing the prioritization of their time and checking out their textbooks may not be of great importance to them, especially if they think the readings may be available online.

The data from the Med 2 class suggest alternate opinions, as students indicated that overall they preferred electronic books and were using them accordingly. This could explain why a large number were less likely to borrow a book if it is on course reserve, and it also offers a correlation with the majority preferring to study at home. As with the Med 1 class, over half of the Med 2 class indicated that they only "sometimes" do their required readings, which could again be attributed to their demanding schedules. When comparing the two classes, the data also suggest that the Med 2 students may have solidified their study style by this point in their medical training, as they preferred electronic versions of the material and outright admitted to doing so. However, there could also be cohort or curricular differences between Med 1 and 2 that were unaccounted for in the survey, thereby indicating a weakness in this study.

Moving forward

Although somewhat perplexing and rather inconclusive, the data obtained from this survey demonstrate the changing nature of the medical library. The results highlight the difficulty in making solid predictions about provision of library collections for undergraduate medical students at a satellite campus, and it leads librarians to wonder how to serve these students who are between the worlds of books in print versus electronic. It is important to evolve with the educational methodologies used in the undergraduate medical curriculum, but librarians should keep in mind that print collections are still valuable to some students and therefore should be maintained to some degree. Fyfe et al. mentioned this in their discussion of distributed medical education in British Columbia, stating that some students still prefer print, Internet access is not always reliable and not all desired materials are currently available online [4]. They also presented a somewhat similar view as Hartel and Cheek in stating that "not all platforms are desirable, and remote authentication to licensed resources continues to prove challenging" [4]. Therefore, within the context of distributed medical education, print books should still be in place to provide additional support if necessary.

One must also consider the broader picture though, which is that these medical students will soon be practising physicians who will be constantly consulting information resources. With electronic book providers at their fingertips, will they consult their library's print collection for information that is already contained on their varying devices? Pairing this with the falling prices of tablet computers, health sciences libraries will need to take this into consideration when planning the collection. Returning to Hartel and Cheek's study, the idea that large books are inconvenient resonates with the idea that electronic options are perhaps just easier to handle. A study by Folb et al. reiterated the possibility of the print medical collection as redundant to professionals, as they surveyed all patron groups of an academic health sciences library that serves both University of Pittsburgh and health system affiliated patrons [5]. They found that over 70% of respondents in the categories of "attending physicians", "interns, residents, or fellow" and "postdoctoral or fellows" reported using electronic books. It was also found that overall, all respondents reported using the library's website more than the physical library to answer health sciences related questions.

Previous literature presents differing views, and this study yielded puzzling data on what medical students think versus how they are actually behaving. A major weakness of this exploration was that the survey was closed ended. This made it difficult to draw solid conclusions based on simple multiple-choice questions and created the possibility that the wording was confusing (i.e., question 7 could be interpreted as asking about a tendency, not a preference). The students also chose to provide extra input through handwritten notes, and they should have the chance to give more original answers in subsequent surveys. In the future it would also be beneficial to ask which subject areas they choose to purchase their books for. Understanding what they deem important enough to buy would help the librarian make decisions about collections management and loan policies. A question about which devices students are using to access e-books would also aid in collections and service planning. Tablet devices are becoming increasingly popular among students, and these offer a potentially better reading experience than a phone, PC, or laptop computer. Finally, future surveys of students in this program should also incorporate the distributed clerkship students, so that information usage habits can be tracked within the clinical setting, thereby mimicking how they may one day use information as practising physicians.

For now, library staff working with the DMNB program will continue monitoring the collections and attempt to predict how best to meet the needs of students within the

rapidly changing and somewhat unpredictable realm of medical education.

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Appendix A: Library Survey – Dalhousie Medicine New Brunswick

1. My current status as a DMNB student is:
a) Med 1
b) Med 2
c) Med 3
d) Med 4

2. Before studying at DMNB, my highest degree obtained was a:
a) Bachelor's degree
b) Master's degree
c) Doctorate

3. On average, I spend the following number of hours on schoolwork each week (outside of classes, clerkship, etc).
a) 1–4
b) 5–8
c) 9–12
d) 13 +

4. My preferred location to study is:
a) Home
b) DMNB building on UNB Saint John campus
c) HWK Commons
d) Hospital
e) Other _____

5. When needed for coursework, I access **books** in the following way(s) (check all that apply).
a) As an E-book through Dalhousie Libraries
b) In person from the HWK Commons
c) I've purchased my books
d) Hospital library
e) Other _____

6. I find it easy to locate and borrow books from the HWK Commons.
True ____
False ____

7. If given the choice between using an E-book or print copy, I would choose.
a) E-book
b) Print copy

8. When given a required reading for a course, I will_____do the reading (pick one).
a) Always
b) Sometimes
c) Never

9. If a book is on reserve at the library, I am less likely to borrow it.
True ____
False____

10. I have encountered a time when I wanted a book to help me with coursework, and neither Dalhousie Libraries nor the HWK Commons had this book.
True ____
False ____

If you answered 'True', how many times has this happened to you?
a) Only once
b) A few times
c) It happens to me a lot

Thank you very much for your time!

FEATURE / MANCHETTE

User Engagement with Mental Health Videos on YouTube[1]

Tami Oliphant, PhD

Abstract: Introduction: Mental health is a primary determinant of well-being, and as more people look online for mental health information, YouTube is an increasingly important information source. Although authoritative organizations such as the World Health Organization post videos to YouTube, when retrieved these videos are interspersed with personal, commercial, governmental, television or other media segments, and institutional videos. YouTube was searched for videos on mental health to measure user engagement with these videos. It was hypothesized that videos posted to YouTube that contained personal narratives would generate more user engagement in terms of more video view counts, likes, and number of comments. **Methods:** YouTube was searched for mental health information using three different search terms and phrases: "depression," "bipolar disorder," and "mental health." The first 20 results for the terms depression and bipolar disorder were screen captured and for the search phrase mental health the first 40 videos were screen captured. All 80 videos were categorized according to video producer type and analyzed using YouTube metrics including number of "likes," view counts, and comments to measure user engagement with the videos. **Results:** The majority of videos returned in the top results were posted by laypersons and the videos focus on the poster's personal experience (38%) followed by videos produced for television and other media (29%). Videos that contain personal narratives and experiential knowledge generate the most user engagement and are preferred sources for users searching for mental health information. **Discussion:** Users' greater engagement with personal videos indicates that there is an important role for librarians and information professionals in assisting users in deciding what mental health information is accurate, authoritative, and reliable regardless of the authority of the video producer. In addition, the results of this research might inform best practices for professional organizations posting videos to YouTube.

Introduction

Research shows that mental illness is the second leading cause of disability and premature death in Canada, that the Canadian economy loses $51 billion a year to mental illness in terms of lost productivity and health care costs, and one in five Canadians will experience a mental illness during their lifetime but only one-third of those who need mental health services receive them [1]. According to the Canadian Mental Health Association, mental illnesses include anxiety disorders, attention deficit disorder, depression, bipolar disorder, eating and mood disorders, suicide, violence, psychosis, schizophrenia, and self-injury [2]. People coping with or managing a mental illness often turn to online sources for support and health information. Increasingly, this includes social media web sites that offer peer-to-peer, expert, and user-generated content such as YouTube.

Patients rely on the Internet more frequently than their physicians as a source of health care information [3]. For example, 81% of adult Americans report having researched at least one specific health topic online, and 21% of those health seekers sought online information about depression, anxiety, stress, or mental health issues [4, 5]. Increasingly, social media web sites such as YouTube play an important role in online health searches [5, 6]. Participation in social media is significantly correlated to increased coping skills and positive health outcomes [7, 8]. Although access to social media sites that offer peer-to-peer support and personal narratives (experiential knowledge) is important for those coping with mental health issues, user-generated content, encouraged by sites such as YouTube, is increasingly supplementing and, at times supplanting, expert medical knowledge.

YouTube is widely regarded as the most important source of visual entertainment and information in the world with more than 1 billion unique users visiting YouTube each month and 72 hours of video uploaded to YouTube every minute. In 2011, YouTube had more than 1 trillion views or around 140 views for every person on Earth. The use of YouTube is a political, social, and economic force that is changing the way in which people

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connect, access, share, and exchange information. However, YouTube is a complex information environment. It is a site from which videos containing erroneous and misleading information are as likely to be retrieved from a search string for mental health as videos produced by the World Health Organization.

Further complicating YouTube's information environment is the lack of transparency regarding the ordering of search results. In October 2012, YouTube announced that "We've started adjusting the ranking of videos in YouTube search to reward engaging videos that keep viewers watching." [9]. YouTube's default relevancy sorting now retrieves and orders video results based upon watch time of videos rather than number of views in an effort to increase video viewership and ad revenue. The search results retrieved from YouTube's altered search algorithm may have implications for both video producers and users who rely on YouTube as a source for mental health information, because total watch time does not necessarily correlate to information that is relevant, authoritative, accurate, and reliable. Furthermore, in addition to this policy of ranking results according to watch time, there is an utter lack of transparency and consistency in how YouTube's search algorithm determines relevant search results.

Understanding how users engage with mental health YouTube videos as a health information source is increasingly important for information and healthcare professionals. User engagement is a complex construct that involves user feelings, mental states, and interactions. Engagement has been problematized in the literature as a "user's response to an interaction that gains, maintains, and encourages their attention, particularly when they are intrinsically motivated" [10]. O'Brien and Toms expanded upon this definition and suggested that engagement is "a quality of user experiences with technology that is characterized by challenge, aesthetic and sensory appeal, feedback, novelty, interactivity, perceived control and time, awareness, motivation, interest, and affect" [11]. One way of measuring user engagement is by analyzing YouTube's metrics. In 2009, YouTube added simple features to measure user engagement with YouTube content such as likes, dislikes, comments, view counts, and more recently, watch time. For the purposes of this study, user engagement was operationalized as attention, interactivity, and feedback to mental health videos as measured by YouTube's metrics — number of comments, likes, and number of view counts.

An emerging body of research examines the range and accuracy of health related videos uploaded to YouTube [12–16]. Results from these studies show great variability in the quality, accuracy, and purpose of health information found on YouTube. For example, Singh et al. [16] found that of 102 relevant videos about rheumatoid arthritis, 54.9% were classified as useful and 30.4% were deemed misleading. All videos uploaded by university channels and professional organizations included in the sample provided useful information but formed only 12.7% of total videos, whereas 73.9% of medical advertisement videos and videos by for-profit organizations were misleading. Similarly, Keelan et al. [17] evaluated 153 YouTube videos about immunization. They measured users' engagement with the videos using view counts and viewer reviews indicated by the star-rating system. The videos were then rated for scientific accuracy based upon whether they were substantiated or unsubstantiated by the 2006 Canadian Immunization Guide. None of the positive videos contradicted the Guide but nearly half of the negative videos (22 of 49; 45%) did. Although researchers found that almost half of the videos were positive and only 20% were negative, when compared with positive videos negative videos were more likely to receive a rating, they had a higher mean star rating, and they had more views. Keelan et al. [17] found that among the positive videos, public service announcements (PSAs) from governmental agencies or nongovernmental organizations received the lowest mean ratings and the fewest views.

Briones et al. [18] found that the majority of the 172 YouTube videos about the human papillomavirus (HPV) vaccine were negative in tone, and similar to the findings of Keelan et al. [17], the negative videos were liked more often by the viewers than positive or ambiguous ones. A common call by these researchers is for public health and medical professionals to be cognizant of the nature of available health related information to be better equipped to deal with patients who acquire information from YouTube and other Internet sources [12–14, 16].

These studies show that YouTube videos produced by experts or organizations (whether governmental or nongovernmental) are the least viewed and generate far less interaction and comments among users than videos produced by for-profit companies or laypersons [12, 13, 15–19]. Paek et al. [19] found that PSAs about child abuse prevention posted on YouTube that were produced by experts or organizations were not as effective in enhancing attitudes towards the PSA and issue importance as those videos produced by a perceivably similar group or layperson. Similarly, Pant et al. [15] found that YouTube videos on myocardial infarction produced by lay individuals generated the most interaction with users through likes and dislikes in addition to generating more comments than videos produced by experts. Other research demonstrates that YouTube users engage with personal narratives more deeply than informational videos [20, 21].

These findings have two implications. First, governments and nonprofit organizations would be wise to encourage individual participation if they wish to increase user interaction and engagement with video content on sites such as YouTube. Second, these studies indicate that for public health authorities and medical professionals attempting to communicate health information via YouTube packaging is as important as content.

Research questions

Despite more people searching online for health information, there is a dearth in the literature investigating user engagement with mental health videos on YouTube as measured by YouTube metrics. Although highly regarded professional organizations such as the Canadian Mental Health Association and the United States National Institute of Mental Health produce videos about mental health, these videos are interspersed with personal, institu-

tional, and commercial videos when searched for and retrieved on YouTube. This research project explores user engagement with mental health videos on YouTube. Because mental health disorders are often related to issues of identity and narrative construction, it was hypothesized that videos in which the producer draws upon personal narrative and experiential knowledge will generate more engagement among users regardless of the authority of the video producer.

Methods

YouTube was searched for mental health information using three different search terms and phrases: "depression," "mental health," and "bipolar disorder." The first 20 relevant results returned for the terms depression and bipolar disorder were screen captured and analyzed. For the phrase mental health the first 40 relevant videos were screen captured and analyzed for a total of 80 videos. The bipolar disorder search retrieved about 663,000 results, the depression search retrieved about 2,440,000 results, and the mental health search retrieved about 4,850,500 results. Because so many more videos were retrieved from the search term mental health compared with depression and bipolar disorder the number of videos analyzed for this search phrase was doubled.

Each video was categorized according to producer type (i.e., personal, commercial, organizations and (or) government, television and (or) media, and university) and then analyzed using YouTube metrics (i.e., source type (producer), likes, view counts, and number of comments). Analyzing YouTube metrics as a means of measuring user engagement is a method commonly used in research [15, 18, 22]. Videos retrieved in the top results were assessed for relevance. Occasionally, music videos or videos were retrieved in a language other than English. Because YouTube search results are unstable in that the same search carried out mere minutes after the original search can yield different results, each dataset was collected in a single session on 15 May 2013 (depression search), 16 May 2013 (mental health search), and 18 May 2013 (bipolar search) to provide a snapshot of YouTube search results for analysis. This data collection method is a potential limitation to the study because YouTube search results are not stable and thus the ordering of videos captures search results from a specific time. It is highly unlikely that the same search results, in the same order, would be retrieved from YouTube by a subsequent search. However, the mix of video producers incorporated into search results retrieved from YouTube is a consistent feature of YouTube.

Findings

Videos were categorized according to video producer type (Table 1). Using a content analytic approach, video producer type categories are mutually exclusive. For example, the personal category included videos produced and posted by lay individuals and it also included videos in which celebrities were interviewed about their experiences with mental health disorders. Videos featuring the personal experiences of celebrities were categorized as personal rather than television or media. Conversely, if the video was a mental health media segment and featured a celebrity as an example of a famous person with the disorder, the video was categorized as television or media.

The majority of videos returned in the top 20 (depression and bipolar disorder) and top 40 results (mental health) were personal in nature (37.5%), followed by television or media-related (28.75%), commercial (13.75%), university (12.5%), and organizations or governments (7.5%) (Table 2). The bipolar disorder search retrieved just one video produced by an organization, a

Table 1. YouTube videos by producer type.

	Search terms			
Producer type	Depression	Bipolar disorder	Mental health	Total number of videos by producer type
Personal	9	10	11	30
Commercial	3	2	7	11
Organizations and (or) government	4	1	5	6
Television or media	2	7	12	23
University	2	0	5	10
Total number of videos sampled	20	20	40	80

Table 2. YouTube videos total views by search string.

	Search terms			
Producer type	Depression	Bipolar disorder	Mental health	Total number of videos viewed by producer type
Personal	3,225,159	402,848	99,615	3,727,622
Commercial	1,022,055	300,629	330,874	1,653,558
Organizations and (or) government	327,487	1,338	174,119	502,944
Television or media	21,077	382,190	52,404	455,671
University	452,109	0	34,791	486,900
Total number of video views by topic	5,047,887	1,087,005	691,803	

trailer for a 40-minute documentary produced by the American Foundation for Suicide Prevention and no videos produced by a university. Although there were more videos retrieved that are categorized as video producer type personal or television or media, this does not mean that users are not engaging with videos produced by organizations, for-profit commercial organizations, and universities. For example, the video "I had a black dog" produced by the World Health Organization generated far more views (141,546) compared with other videos retrieved and was placed in the fifth position for the "depression" search. Similarly, personal stories, television interviews, and features on mental health such as TED talks are frequently uploaded to YouTube but these videos do not necessarily engage users in terms of comments, view counts, or likes. For example, the TED talk "We Need to Talk about Depression" retrieved in the fifteenth position in the search results for depression had just 1,589 views, 46 likes, and four comments.

In terms of user engagement as measured by total view counts, personal videos were viewed at over twice the rate of commercial videos (3,727,622 vs. 1,653,558) and roughly seven times the views of government- or organization-produced videos (502,944 views). These data support previous study findings that people value experiential knowledge and they engage with videos produced by people like themselves. However, for the mental health search, personal videos ranked third for total view counts behind commercial and organization and (or) government produced videos. These findings indicate that users engage with personal videos particularly when they are focused on a mental health issue such as depression or bipolar disorder rather than videos that broadly discuss mental health. In the YouTube search results the lowest number of total video view counts came from the television or media category (455,671 total views) despite being the second most frequently returned video producer type (28.75% of all videos retrieved). The results showed that users are watching videos produced by television or other media about bipolar disorder more frequently than commercial videos and at nearly the same rate as they watch personal videos.

Furthermore, 40 videos were sampled for the mental health search compared with just 20 for the depression and bipolar search. Despite being twice as large as the other searches, users watched fewer videos about mental health. As noted previously, users were not engaging with personal mental health videos as often as they were engaging with commercial and organizations and (or) government mental health videos. Users watched commercial videos produced by an organization called psychetruth, Healthguru's "5 Types of Bipolar Disorder" and videos from organizations and government such as World Health Organization's "WHO: Mental Health," for example, more frequently than personal videos. Many health organizations have a mandate to promote mental health and commercial organizations advertise their products and services under the guise of promoting mental health, which may partially account for the higher total number of views.

Table 3 shows the average number of views per like and per comment for each video producer type. Thus, lower numbers indicate greater user engagement with the video. For example, the depression search indicates that for personal videos users liked the video for every 64 views on average, and users commented on the video for every 122 views on average. Videos in which comments and likes were disabled were excluded from these calculations. These numbers were aggregated and consequently, some individual videos in the same producer type category had greater or lesser amounts of interaction compared with others. As hypothesized, personal videos generated more user engagement as measured by number of likes and number of comments across all three searches than other video producer types with the sole exception of number of views per comment for the mental health search. Videos produced by commercial entities generated a fair amount of user engagement in both likes and comments. For those videos produced by organizations and (or) governments, television or media, and universities, users engaged with the video far more frequently in terms of likes but not comments. This finding indicates that these video producer types are not perceived by users as being as interactive in the same way personal videos are. Similarly, the number of likes and comments (expressed as a ratio number of view counts / number of likes and comments) was the highest for governmental videos with the sole exception of the average number of views of television or other media produced videos per comment for the bipolar disorder search, which averaged 1,487 views per comment.

Discussion

There are a number of implications of these findings for librarians and information professionals. As hypothesized, users engaged more frequently with videos that are personal in nature as measured by total view counts and

Table 3. Average number of views per like and per comment

	Search terms					
	Depression		Bipolar disorder		Mental health	
Producer Type	Likes	Comments	Likes	Comments	Likes	Comments
Personal	64	122	160	155	43	205
Commercial	247	137	347	362	166	173
Organizations and (or) government	143	772	335	669	76	15,829
Television or media	103	162	198	1,487	55	213
University	138	753	0	0	166	483

the lower ratio of number of views per like or comment. YouTube viewers tend to comment the least for videos produced by organizations, television or media, and universities, whereas they comment most frequently on videos produced by commercial organizations and those that are personal in nature. However, in terms of likes, the commercial videos were the least liked in all three searches. Users perceive personal videos to be more engaging in terms of interactivity, feedback, and attention as measured using YouTube's metrics. Although YouTube generally is a medium that facilitates user engagement, merely posting a video to YouTube does not guarantee that users will respond, interact, or engage with it.

Searches for the phrase mental health have very low view counts and user interactions regardless of video producer. This suggests that users are not using the search string mental health as frequently as depression or bipolar disorder when searching for videos. For example, the personal video "Mental Health Awareness Week 2013" was returned in the 15th position of results but did not have a single view, like, or comment.

YouTube retrieves a wide array of videos produced by individuals, governments, commercial organizations, television or media, and universities, but an unexpected finding was the randomness in which YouTube orders search results. Search results were not determined by view counts, number of comments, video producer, or date posted. Despite YouTube's October 2012 announcement that video results will be retrieved according to watch time, there is no way to ascertain if, and how, YouTube's search algorithm determines relevant search results.

Consequently, librarians can support users looking for online mental health or other consumer health information by drawing upon both expert sources and sources of information where experience is emphasized. In addition, the results of this research might inform best practices for professional organizations posting videos to YouTube. For example, including a personal narrative or story is most likely to generate more user engagement.

Future areas of research include analyzing the comments section of videos to determine what kind of information exchange, if any, occurs on the comments and to determine how positive or negative the comments are, and how accurate or authoritative the comments are. Another avenue of future research includes analyzing how YouTube determines the order of search results. The primary limitations of this study are suggested as future areas of research using a larger sample size, additional analysis of user comments, and further investigation of how YouTube renders search results. As more people search online and use video sites such as YouTube, it is crucial that library and information professionals understand how people are using, and engaging with, video to supplement their health-related information seeking practices.

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FEATURE / MANCHETTE

The Information Needs of Clinicians: a Study of the Doctors Nova Scotia Clinical Library[1]

Patricia J. Lee

Abstract: Background: The Clinical Library (CL) is a virtual library of books, journals, drug information, and patient information. It has no hard copy books or journals to lend. **Objectives:** On the 10-year anniversary of the CL, feedback from information skills training indicated a need for a user assessment survey to ensure that the CL continues to meet the medical information needs of the modern clinician. The study was conducted to assess the level of electronic information use, the geographical distribution of users, and the frequency of use by various clinical practitioners. The study also contained a survey of health librarians in the United Kingdom to assess whether our information strategies are in line with international practices and needs. **Methods:** External consultants were hired to conduct interviews and a survey among the membership and to perform an environmental scan of Canadian and U.S. services. A series of interviews was conducted by the health librarian at health libraries in the U.K. **Results:** Sixty-two percent of survey respondents said they access information to help inform patient diagnosis or treatment at least every 2–3 days, 40% of respondents regularly use web-based medical information services, and 46% of respondents used the CL as part or all of their electronic search strategy. The use of the CL varied widely depending on the location of respondents and their access to a health library. Respondents in rural areas and those unaffiliated with hospital libraries were more likely to use the virtual CL. Family practitioners showed the most familiarity with the CL offerings and reported the highest use of the CL (66.7% of respondents). A significant minority of respondents found the CL difficult to navigate. The U.K. arm of the study showed that services offered there were similar to those offered by the CL. **Conclusions:** Based on the findings, the CL remains a vital service for members. The CL should maintain its services for members and make the user interface easier to use. A majority of clinicians are seeking evidence to support decisions about patient care. The use of web-based resources, including journals and textbooks, is growing. The CL is meeting the needs of a significant portion of respondents, mainly family physicians. The U.K. study found that librarians there offer similar services to those offered by the CL and that, based on their use, U.K. librarians expect to be offering these services for some time to come. The CL must look for synergies and duplication with affiliated libraries and find ways to collaborate and promote services.

Introduction

The Clinical Library (CL) was launched by Doctors Nova Scotia (DNS) in 2000 for provincial physicians, surgeons, and students; mostly for rural physicians who do not have access to a local hospital or university health library. Of the approximate 1800 members in 2000, roughly 40% lacked access to a local health library. The main library services were to provide: (*i*) a core collection of books, journals, drug information, and patient information; (*ii*) information skills training (some face to face, some online); (*iii*) literature searches; (*iv*) information requests; and (*v*) referral services.

The services were well received by members, and over the years the face-to-face information skills workshops reached approximately one-third of the members. Feedback was provided through workshop evaluations. However, it was clear there was value in obtaining wider input about all services offered through a survey distributed to as many members as possible.

Literature review

The ways physicians and surgeons use information has been well documented in the literature [1–3]. Studies have focused on why clinicians seek information [4–6]. In Davies' 2007 review of the international literature from 1996–2006, she described the type of information needs clinicians have, barriers they encounter, and which sources were used [7]. She found that, even then, traditional face-to-face communication and use of print sources was still prevalent among qualified medical staff in the clinical

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setting. Again in 2007, Ely described the kinds of patient care questions physicians can't answer [8]. Also in 2007, Gonzalez reviewed 3500 patient consults in Spain to identify the most frequent questions asked by physicians there [9]. The cause of a certain symptom was the most frequently asked question according to their study. They also found that only one in five questions was followed up. In 2009, Hughes looked at the use junior physicians made of web 2.0 for information seeking [10]. He found that Google and Wikipedia were used by 80% and 70% of respondents, respectively, and that their credibility risks were mitigated by cross checking. Also in 2009, Prendiville found that web-based pediatric resources were increasingly significant in this area of medical practice and that many pediatricians believed that patient care depended on these resources [11].

Objectives

The aim of the study was to get a better understanding of provincial clinicians' current information practices and to determine whether the CL meets the demands of the modern clinician.

Primary objectives included obtaining information on: how widespread the use of electronic medical information sources was, how often the CL was used to meet clinicians' needs, whether geographical location and access to a hospital library impacts the use of the CL, the familiarity with the spectrum of resources and services offered by the CL, the ease of use of the current CL interface, and whether certain practitioner specialists were more or less familiar with the CL.

Methods

Environmental scan

Consultants performed an environmental scan of other comparable or leading-edge virtual information services for medical or other professional groups from which we could gain ideas and insights. We looked for services offered by professional associations and others that provide information resources as well as services that inform or support decision making and problem solving. The consultants contacted a cross-section of DNS members in a series of 18 interviews (from December 2010 to January 2011). Specialist and family practitioners from urban and rural settings were contacted from a list provided by the clinical librarian. Ten family practitioners, five specialists, and three students were interviewed. They were asked about their information needs currently and in the near future. The interviews explored how physicians inform decisions regarding patient care, how they keep current in their area of practice, and how they learn about public health issues. This preliminary study highlighted issues of importance for members which were followed up in the survey questions.

Interviewees were asked how they find information for questions about patient care, keeping up to date in their area of practice, keeping up to date on current and high-profile public health issues (e.g., mumps epidemic in 2007), current public health issues and community health (e.g., obesity, physical activity), research, and other topics as identified by the respondent.

Interviewees were also asked to identify the types of information they require for their main responsibilities and preferred sources. The possible sources included: informal discussion with colleagues, professional journals and reference material in their office or clinic, information provided from pharmaceutical companies or other commercial sources, internet searches, and information services and databases available online such as the CL and the Canadian Medical Association's (CMA) online resources for members.

Finally, interviewees were asked about their information challenges, specifically about what types of information are most difficult for the respondent to locate or acquire.

Survey

The survey was developed by the library steering committee and the consultants, and it was based on the responses from the interviews. The survey was administered by the consultants. In March 2011, both email and fax were used to distribute the survey as widely as possible among the membership of 10 provincial health districts in Nova Scotia.

Surveys were also available on the website. Email notices of the survey were sent to all members. Consent was assumed through submission of a completed survey. The goal was to have as many surveys as possible completed and returned.

U.K. study

To get more detail about the practice and planning of health libraries further afield, the clinical librarian conducted a number of interviews with Health Librarians in the U.K. The U.K. was chosen because it has a strong library system within the National Health Service (NHS) that appears to offer insights of value to us. Also, there is no language barrier and it is relatively accessible geographically. Initial contact was made with Richard Osborn, NHS London Library Lead, who suggested visiting a cross-section of health libraries. Interviews were arranged with four professional associations (The British Medical Association, The Royal College of General Practioners, The Royal College of Obstetrics and Gynecology, and the Royal College of Surgeons), 1 hospital library (Whipps Cross Hospital Libarary), and 3 London university medical school libraries (Imperial College, University College, and Kings College).

In the U.K. interviews, health librarians were asked:

1. What are the most popular services in your library?
2. What are the strengths and weaknesses of these services?
3. What are the challenges of the services?
4. What initiatives have been taken to address these challenges?
5. What are your expectations about the most popular services in 5 years?
6. What other comments can you make relative to these issues?

Results

Environmental scan

The environmental scan of comparable virtual information services for medical associations and groups in North America showed that the CMA library offers similar (mainly) family practice resources and services to those offered on the CL site, and the College of Family Physicians of Canada (CFPC) library offers an extensive search service. However, neither of these libraries offers information skills training.

Interviews

A majority of participants and respondents described needing information about diagnosis, therapy, and prognosis. Several interview participants mentioned a lack of awareness of the CL. Others expressed concern that the CL was not easy to use.

Survey

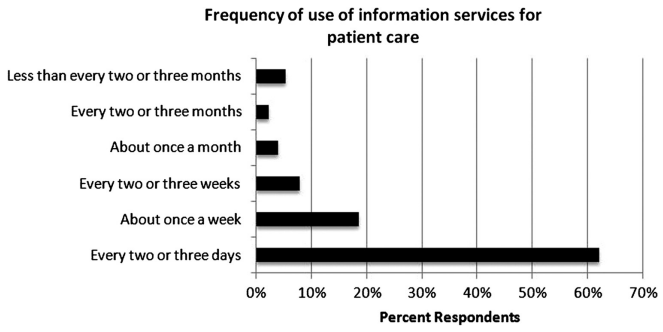
Of the 3785 physicians and surgeons surveyed in April 2011, 644 (17%) responded to the survey, a significant uptake given the demands on busy clinicians.

A key question in the survey was the frequency with which clinicians consulted information services to help inform patient diagnosis or treatment. As shown in Figure 1, the majority (62%) of respondents said they access information services (e.g., literature searches, article requests) to help inform patient diagnosis or treatment at least every 2–3 days.

Another key question related to the sources used to access this information. The results shown in Table 1 demonstrate that web-based data retrieval is increasingly common. We found that 40% of respondents regularly use web-based medical information services, 27.6% use medical journals on the web "all the time" to assist with diagnosis or treatment, 38% use them "most of the time", and 19% use them "much of the time". We found that 21.3% of respondents conduct internet searches "very often" for diagnosis or treatment using search engines such as Google and general web sites such as Wikipedia, 32% use them "most of the time" and 25% use them "much of the time" (see data from Table 1).

We also asked about the use of DNS CL. Among the respondents who use web-based medical information services, 46% used the CL as a part or all of their search strategy.

Fig. 1. Frequency of use of information services for patient care.



The use of the CL varied widely depending on the location of respondents and their access to a health library. For example, 93.3% of respondents from Pictou County used the CL, whereas only 62.2% of respondents from Cape Breton district used the CL. Respondents with hospital privileges were less likely to use the CL (40% never use) than respondents without hospital privileges (35.3% never use). This likely reflects the easy access of clinicians with hospital privileges to hospital libraries. Respondents in the Capital Health District, which includes the two major teaching hospitals, were most aware of the CL offerings but least likely to use the CL (Capital Health: 59% use, and IWK Health Centre: 46.1% use). This likely reflects their access to their own hospital libraries and their access to the University Health Sciences Library.

It is family practitioners, especially in rural districts, who lack access to information from a health library. They have a greater need for health information so it was not surprising that the family practice cohort of the survey showed the most familiarity with the CL offerings and were the survey group that reported the highest use of the CL (66.7% of respondents).

A survey question relating to ease of use of the CL was included, as this was thought to be a major factor in the widespread use of this service. Respondents were asked to rate the ease of finding the information they require as good, satisfactory, or poor. The majority (73%) of respondents rated this element of the CL as good to satisfactory, whereas 21% rated the ease of finding specific information on the CL as poor. Interestingly, 91% rated the training and support to use the CL resources as good to satisfactory. Although most respondents found the CL easy or satisfactory to use, a significant minority found it difficult to use.

Comments from the interviews and open comments on the survey indicated that, although many members were familiar with aspects of the CL resources, many were not familiar with other important resources such as practice guidelines and patient fact sheets, and services such as the literature searching service.

Open comments from the survey emphasized the need to improve the profile and usability of the library. The comments also indicated that it would be better to focus the CL in its areas of strength, such as providing information for family practitioners.

U.K. study

From the U.K. interviews, we learned that the CL services were widely available and that U.K. librarians expect a continued need of these services well into the future. Specific services highlighted were: face-to-face information skills training, literature searches, information requests, and referral services.

The U.K. survey indicated that information skills training was of significant importance going into the future.

Conclusions

The environmental scan of comparable virtual information services found that the CMA library offers similar

Table 1. Survey responses to the question "When you need information to assist with a diagnosis or treatment of a patient, how frequently do you use each of the following sources of information?"

	1 Never (%)	2 (%)	3 (%)	4 (%)	5 All the time (%)	Response total	Average score
Talk with colleagues	6 (.93)	64 (9.95)	149 (23.17)	215 (33.44)	209 (32.5)	643	3.87
Ask a specialist	10 (1.55)	84 (13.04)	181 (28.11)	258 (40.06)	111 (17.24)	644	3.58
Medical journals in print	100 (15.53)	201 (31.21)	154 (23.91)	137 (21.27)	52 (8.08)	644	2.75
Medical texts in print (e.g., Harrison's, etc.)	55 (8.54)	199 (30.9)	210 (32.61)	133 (20.65)	47 (7.3)	644	2.87
Information provided by pharmaceutical companies or medical vendors	238 (36.96)	300 (46.58)	80 (12.42)	21 (3.26)	5 (.78)	644	1.84
Internet searches (e.g., Google, Wikipedia, etc.)	31 (4.82)	107 (16.64)	160 (24.88)	208 (32.35)	137 (21.31)	643	3.49
Medical journals on the web	41 (6.37)	51 (7.92)	126 (19.57)	248 (38.51)	178 (27.64)	644	3.73
Medical texts on the web	67 (10.4)	109 (16.93)	151 (23.45)	189 (29.35)	128 (19.88)	644	3.31
Web-based medical information services (e.g., UpToDate, etc.)	65 (10.09)	77 (11.96)	88 (13.67)	163 (25.31)	251 (38.98)	644	3.71
Average rating							3.24
If you use other sources of information to assist with diagnosis or treatment, please describe these below						Response total	127

Note: Frequency of use was rated on a scale from 1 to 5, where 1 means "not a source of information I use, would never use", and 5 means "a primary source of information, use it all of the time".

family practice resources and search services to those offered on the CL, and the College of Family Physicians of Canada library offers an excellent search service. However, neither of these national services is able to provide the local library referral service that is needed for specialists, nor do the national services offer information skills training, which the U.K. study identified as an important service.

This scan suggests that because DNS offers information resources similar to the CMA library, it is worthwhile exploring whether to change the resources offered so that members have access to more point of care tools and support for mobile devices. Similarly, it is important to consider whether this duplication of resources or offering of different sources is worthwhile or whether our members would be better served by offering only library search and referral services without the e-resources. A collection analysis and study of our users' access to resources will be conducted to address this question.

A key conclusion drawn from the survey is that a majority of respondents are seeking evidence to support decisions about patient care, based on the finding that 62% report using information services to inform decisions about patient care every 2–3 days. In addition, it indicates that a majority of respondents use information services to find the information they need. This underlines the need for information services. It is also important to note that the use of web-based resources including journals and online textbooks is growing. Clearly there is a need for online resources. Careful study of users' access to these resources is essential to determine whether the DNS CL should maintain, modify, or eliminate its collection.

Because 46% of respondents reported using the CL as part or all of their search strategy, it appears that the CL is meeting the needs of a significant portion of respondents. The question still remains whether the CL in its present state offers the best value to its users. A more focused study will soon be undertaken to address this issue.

Survey responses indicated a wide variety of CL users among clinicians, depending on their location and access to a hospital or university health library. However, among these users, family practitioners are the most aware of the CL and they are the most frequent users. This is logical as more family practitioners than specialists work in the community and do not have access to a hospital library. In addition, the CL has more family medicine resources than resources for specialists.

Most specialists have hospital privileges and some hospitals have hospital libraries. Also, the lack of many specialist journals available on the CL was noted. Consequently, we conclude that it is mainly family physicians that use the CL.

A significant minority of respondents found the CL hard to use, and a greater percentage of users were not familiar with some of the CL services such as literature searches and resources such as practice guidelines and patient fact sheets. This suggests a need to improve the CL profile and usability.

This study resembles the studies by Case [4], Cullen [5], and Gorman [6]. Case found that MDs need to know about medical practice and research findings about patient conditions. Cullen found that clinicians need recent information on both common and rare diseases. Gorman developed a taxonomy of types of information needed, including patient data, population statistics, medical knowledge, logistical information, and social influences such as local practice. This study found that clinicians need information about diagnosis, therapy, and prognosis and a majority of survey respondents look for it every 2–3 days.

The U.K. study found that librarians there offer similar services to those offered by the CL and that, based on their

use, U.K. librarians expect to be offering these services for some time to come. Insights gained from our British counterparts and their national library service include the benefits of libraries collaborating on programs and resources. The NHS has had a national collection of resources for all health professionals for many years, and they have a highly developed infrastructure to ensure that individual health libraries have support for programs and initiatives for library users. Richard Osborn and the London team procure information for all health libraries in London and coordinate with other parts of England. Four national teams coordinate information provision nationally for England, Scotland, Northern Ireland, and Wales.

Based on the information obtained from the U.K. study, possible initiatives for the CL to consider include:

(*i*) introducing information skills and e-learning modules in a short, interactive format, for example subject guides indicating where to find different types of information; developing a good search strategy; and database searching;
(*ii*) determining ways to interact with departments within DNS and outside organizations to improve the library profile and programs, for example, consider collaborating within DNS or with another organization to see if there are any common interests in developing an e-learning program; and
(*iii*) incorporating results of this study into the CL communications and marketing plan so DNS managers and the board understand the value of library services and information skills for members.

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FEATURE / MANCHETTE

Evaluation of the Effectiveness of Course Integrated Library Instruction in an Undergraduate Nursing Program[1]

Alison Farrell, Janet Goosney, and Karen Hutchens

Abstract: Introduction: Many faculty in two Schools of Nursing found that students in the fourth year of the Bachelor of Nursing program were not well equipped to perform information literacy activities efficiently and effectively, such as doing research to support their daily work. A course-integrated information literacy program was implemented at both sites, which left some students having very little information literacy training, whereas others who started the program in later years had information literacy training in all or most years of the curriculum. This study sought to evaluate students as they gained more experience with information literacy. **Methods:** To determine if increased exposure to information literacy training improved students' levels of competency and confidence, the authors compared first-year students with two groups of fourth-year students who had differing exposures to information literacy. **Results:** Acceptable response rates for data analysis were acquired at only one site. It was found that overall, fourth-year students were more confident and tested better with information literacy competencies than first-year students, but there was not as much improvement as was hypothesized. **Discussion:** The results of this evaluation have demonstrated a need to improve the information literacy teaching in certain areas. The data have also indicated that students do indeed retain information literacy skills with an increased number of sessions. Further areas for study are outlined as well as the limitations and strengths of the study design.

Introduction

In a world where vast amounts of health-related information are produced, information literacy (IL), the ability to "recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information" [1], is a necessary skill for nurses. To be information literate, a nurse must be able to define exactly what he or she needs to know, select the most appropriate resources to answer those questions, find the information efficiently, evaluate it to make sure it is the right information for that situation, and finally use the information in an ethically responsible way. These skills are increasingly required of nursing graduates [2] and should be learned well before they enter into a patient care setting.

This paper examines a curriculum-integrated, multiyear information literacy program offered to Bachelor of Nursing (BN) students at two Memorial University sites, both located in St. John's, Newfoundland. It focuses on an outcomes-based plan of assessment that was used to evaluate the program as it was phased in over a four-year period. Designs of the assessment instrument are discussed, along with results at one site. Challenges and recommendations to be considered when engaging in this kind of long-term evaluation are reviewed.

Literature review

For many years, librarians have been giving one-shot information literacy sessions to students, but there is evidence that the information taught in these one-time sessions is not retained long term. The old adage of "use it or lose it" seems to ring true when applied to information literacy, with research showing that IL skills taught in one-shot sessions are often not retained and carried forward into subsequent semesters [3–5].

Carlock and Anderson sought to evaluate IL skills using performance-based assessments [6]. They found that students who received only one IL session scored lower on their assessments over time than did their counterparts who continued to receive IL sessions through the course of their program. Lalor, Clarke, and Sheaf found that IL

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training in the first and second years of a midwifery undergraduate program improved post-test scores, but further training in the third year did not contribute to greater knowledge gain [7]. By contrast, Jacobs, Rosenfeld, and Haber, who assessed a program involving IL modules taken throughout the curriculum, found that test scores continually improved with the completion of each module [8]. Although it is true that one-shot sessions can be useful in the short term, little evaluation has been done with this type of IL over longer periods [9]. It is felt that IL should be at the point of need [5, 10], should mirror real world situations [5], and should be spread out over an entire curriculum with each session building on the previous lessons [5]. It is also felt that graded work will increase the retention of IL skills [6]. However, incorporating a series of IL sessions into an already full curriculum has its challenges. Not all faculty members teaching each particular course will want to include an IL component. This means that as the teaching faculty change, the inclusion of IL may change as well. It is therefore imperative to gain faculty support and to ensure they understand the importance of IL for their students. Once a curriculum-integrated program is implemented, it is also important to incorporate measures of evaluation. As Kroth, Phillips, and Eldredge point out, this can be difficult due to the ever-changing nature of health care and therefore the necessity for health related curricula to change rapidly [11]. With changing curricula, it is hard to be consistent in what and how IL skills are taught.

Although there have been a large number of studies evaluating the information literacy skills of nursing students, most have been conducted in Australia, New Zealand, Asia, the United Kingdom, and the United States. According to Brettle, who published a systematic review looking at health library related IL evaluations, only three studies were found in Canada and these were either conducted in the clinical setting or with medical and dental students [12].

Of the IL evaluation studies that have been published, many different methods were employed. The most common method of evaluation seems to be the use of pre- and post-tests [7, 8, 13–19]. Studies using pre- and post-tests found that there was overall improvement in IL knowledge after students received the training [7, 8, 13, 14, 17, 19]. In some cases, however, the improvement was found to be marginal [13, 19]. Another method is the use of different cohorts. One study tested five different cohorts of medical students who received varying levels of IL [9]. It was found that although all of the students remembered their IL sessions, those with more training showed that they could expand on the skills they had learned. Cullen, Clark, and Esson assert that this shows that IL training provides valuable skills and contributes to lifelong learning [9]. Another study looked at occupational therapy students with some or almost no IL training [20]. Other studies used performance-based assessments [6] or portfolios [21] as a method of evaluating actual IL skills. Lastly, one study was found that did a one-shot survey of students who took an IL class [22].

Of the evaluation studies found, most looked at students' levels of comfort or confidence in their IL skills. The research from these studies was not conclusive and the findings were often contradictory. A number of authors found that many students are overconfident in their IL knowledge; when surveyed for both levels of confidence and actual ability, students rated themselves as having a good understanding of IL, but the questions that actually tested their knowledge or abilities showed that they lacked IL skills [9, 18, 23, 24]. Conversely, students who performed well had a tendency to underestimate their skills [23]. Others also found low confidence levels with regards to IL when surveying students [15, 22, 25]. Many studies found that confidence levels increased as the amount of IL training increased [13, 16, 17, 19, 26], but one landmark study by Verhey in 1999 found that confidence levels did not increase with increased exposure to IL [15]. Verhey postulates that this may be because as students' exposure to IL training increased, their knowledge of the vast amounts of information also increased and so they realized that "the more you know, the more you know what you do not know".

One of the unique features of the IL programs at Memorial is the exposure to searching principles for evidence informed practice (EIP), the "continuous interactive process involving the explicit, conscientious and judicious consideration of the best available evidence to provide care" [27]. No studies were found that evaluated undergraduate nursing students' IL skills in the area of EIP. Those studies that did look at IL skills in EIP examined students at the graduate level [8, 23], post-registration nurses returning to university to receive their BNs [16], occupational therapy students [20], or medical students [9].

Background

Memorial University of Newfoundland is the largest University in Atlantic Canada. It offers a BN program through the School of Nursing located at the Health Sciences Centre (HSC). The Centre for Nursing Studies (CNS), operated under the Eastern Health Authority, was formed in 1996 when several separate nursing schools in St. John's were amalgamated. The CNS offers a BN program in conjunction with Memorial University. All nursing students are Memorial students and are granted degrees from Memorial University.

Until 2008, nursing students at the HSC received a one-shot information literacy class in their first semester. This class was designed to teach them about database searching, different types of literature (scholarly vs. popular), website evaluation, and some of the details of American Psychological Association citation style, all in a single one- to two-hour session. Students at the CNS received only a brief introduction to the library during their orientation week. Anecdotal information from nursing professors indicated that these sessions were not adequate and that BN students were not finding appropriate materials for their research papers. The general consensus between instructors and librarians was that students would benefit from information literacy instruction sessions in all years of the nursing curriculum and that each session should build on the skills previously learned.

In the fall of 2008, a new program was implemented at the HSC in which BN students receive IL instruction in the

first, second, and third years of the nursing curriculum. This change was brought about through a proposal developed by one of the researchers that mapped specific IL skills to the objectives of the nursing curriculum. The following outlines what is taught in each year of the curriculum:

First Year: basic searching of the Cumulative Index for Nursing and Allied Health Literature (CINAHL) database, and evaluating and distinguishing between popular and scholarly literature.

Second Year: drug information resources, alternative medicine resources, critical evaluation of web-based information, and advanced CINAHL searching techniques (subject headings).

Third Year: the principles of evidence informed practice, study types, formulating a research question using the PICO (patient, intervention, comparison, outcome) method, searching PubMed using both MeSH and clinical queries, searching CINAHL using clinical queries, and other evidence-based resources (UptoDate, Dynamed, etc.)

Each IL session has an assignment designed to encourage reflection and to reinforce the knowledge and skills learned in that class. All assignments are marked by a librarian and range from 5%–15% of the student's final mark in a particular course.

The embedded information literacy program began at the CNS in the winter of 2009. It followed the same set of classes and assignments as the program at the HSC with a few minor modifications. These modifications were made to allow as many students as possible to receive the IL sessions. The second-year students received the CINAHL instruction they would normally have received in first year, and the fourth-year students received the PubMed and PICO instruction that was taught in third-year classes at the HSC site.

To evaluate the success of the cumulative, curriculum-integrated information literacy program at the HSC, the researchers developed an outcomes-based plan of assessment. This assessment plan was designed to be administered to each graduating class over a four-year period. Because the IL program was implemented for all classes at once, this would allow for comparison of students with different levels of exposure to the program, from those in the initial year of assessment who had received only the original one-shot class to those in the last year of assessment who have engaged in all phases of the new program. This evaluation was later adopted at the CNS. Owing to the modifications in timing of the IL sessions, it was necessary to employ a different study method using the same assessment tool.

Design

Following the implementation of the new IL program at the HSC in the fall of 2008, two librarians partnered to develop a plan of assessment. The first step was to identify the kinds of evidence that needed to be gathered. As a result, a project purpose was articulated, followed by specific research goals.

Purpose: To evaluate the success of a new cumulative, curriculum-integrated IL program for undergraduate nursing students, by comparing the IL skills of graduating students over the four-year program-implementation period.

Goals: (*i*) to test the confidence and (or) empowerment of students with regards to information literacy skills, (*ii*) to test the actual ability and (or) learning of those skills, and (*iii*) to test the effectiveness of the cumulative, curriculum-integrated instruction model.

As a result of goals (*i*) and (*ii*), the researchers took a dual approach to evaluation. Some questions were designed to evaluate students' confidence in their own information literacy skills and their comfort with evidence-informed practice, whereas others provided evidence of actual learning. Research on cognitive bias has demonstrated that unskilled individuals frequently over-estimate their ability at a given task, a phenomenon that has come to be known as the "Dunning–Kruger effect" [28–30]. Melissa Gross and Don Latham have found evidence of the Dunning–Kruger effect among undergraduates when asked to self-assess their information literacy skills [31, 32].

To address concerns about the Dunning–Kruger effect, the majority of evaluation questions were outcomes-based, designed to test actual student learning in a number of identified areas. To develop these questions, the researchers started by examining the learning outcomes for the new nursing IL program (Table 1). Fourteen questions were created, each one designed to test one or more outcomes (for a complete list of questions see Appendix A). A variety of question formats were used (e.g., multiple choice, question matrix, short answer), depending on the nature

Table 1. Learning outcomes for the BN information literacy program, with corresponding test questions (numbers based on the Fall 2011 questionnaire).

Outcome: As a result of the BN information literacy program, students will be able to …	Corresponding question(s)
formulate a searchable question.	12, 13, 19
understand different study types, and to know when each is appropriate.	9, 11, 14
find information in health related databases (CINAHL, PubMed, etc.).	6, 7, 19
understand the process of doing an effective and efficient literature search.	All
appraise and revise search strategies.	7, 19
find information on natural products, and alternative and complementary medicine.	15
identify various drug information sources for professionals and the general public.	16
effectively evaluate health information resources for patients and health professionals.	17, 18
distinguish between scholarly and popular writing.	8, 10

of the question and to create some variety within the instrument.

Test design is a challenging process, and given that the goal of the project was to develop a long-term study in which data could be compared over a four-year period, it was important to ensure that any problems with question design be identified and fixed prior to implementation as the content of the questions could not be changed or adjusted following its initial distribution. For this reason, the researchers adopted three strategies to ensure the efficacy of the instrument.

Drawing on in-house expertise

The first strategy was to seek out expertise in test design. That expertise was readily available via the Instructional Development Office (IDO), a resource that provides support to Memorial University faculty for the enhancement of their teaching knowledge and skills [33]. Advice received from the IDO led to a number of improvements in the instrument, including clarification and rewording of some questions. The IDO also assisted with classifying each outcomes-related question in terms of the demonstrated type and level of learning so that they could be reordered in increasing order of difficulty.

Question classification

To evaluate the relative difficulty of the outcomes-based questions, each one was classified according to Bloom's Taxonomy. Because all questions tested some aspect of knowledge, understanding, or critical thinking, classification was based purely on the cognitive domain [34]. By classifying the questions, the researchers were able to identify the level of cognitive engagement required to successfully complete the questionnaire.

Of the test-type questions posed, six engaged respondents in lower-order, concrete cognitive activities, such as knowledge recall and comprehension. Eight questions challenged students to use higher-order skills such as analysis, synthesis, and critical evaluation. The largest proportion of higher-order questions required respondents to engage in analysis, level four of Bloom's six-tiered cognitive domain. This is not surprising, given that research is a pedagogical activity often associated with the fourth level.

By examining the questions through the lens of Bloom's Taxonomy, it was determined that the questionnaire provided an accurate measure of learning by engaging students at an appropriate cognitive level. To respond to all questions successfully, students needed to demonstrate basic knowledge but also move beyond simple recall to exhibit the higher-level skills that characterize information literacy, such as critical evaluation and analysis.

At the advice of the IDO, questions were reorganized to guide respondents "up the cognitive ladder", starting with simpler questions and gradually moving toward more complex, high-order skills. The expectation was that this would encourage students to complete the questionnaire by helping them to "warm up" to the more demanding questions. It was also hoped that the further respondents progressed, the more committed they would feel to completion.

Usability testing

After the questionnaire had been drafted and classified, an online version was created using Survey Monkey. The next step was to test both the usability of the online instrument and the clarity of the questions. This step marked the beginning of the collaboration between the HSC and the CNS in the area of IL assessment. With the help of the CNS librarian, four volunteers were identified from among the CNS graduating class to help test the instrument. CNS students were chosen for testing, as opposed to HSC students, because although they had comparable knowledge and experiences, these CNS students were not among the group who would be asked to complete the questionnaire. To recruit testers, an email was sent to students explaining the project and offering a small incentive of $10.00 to those who were willing to volunteer their time.

Each tester was met individually and was asked to work their way through the instrument with a researcher observing, making notes, and occasionally asking questions. Testers were encouraged to comment on anything that they found confusing or misleading. They were timed as they worked their way through the questionnaire to help determine an average time for completion. No changes were suggested as a result of usability testing; however, testers did complete the questionnaire more quickly than originally estimated.

Methods

Although the evaluation was conducted at both the HSC and the CNS, response rates were extremely low at the HSC providing nonrepresentative samples; therefore, only CNS methods and results were examined. Due to modifications in the timing of the IL sessions in the 2009–2010 school year, it was necessary to administer the survey using a different method than had originally been planned for the HSC.

The embedded IL program at the CNS began in 2009, but the evaluation of the program began in the fall of 2010. At the CNS, students in their first year completed the survey as well as students in their fourth year. The goal was to compare answers from first-year students with answers from fourth-year students. The survey was given as a pretest to the classes of 2014 and 2015 (first-year students) prior to their first IL class. The survey was also given to the class of 2011 (fourth-year students) after they had completed years one and two of the IL program and to the class of 2012 (fourth-year students) after they had completed years one, two, and three of the IL program.

In contrast to the original method at the HSC using an online survey, the instrument was disseminated to students in class as a paper questionnaire. Students were given 20 minutes to complete the survey, but participation was not mandatory.

Two librarians graded the survey using an agreed upon rubric. Unclear responses were marked using consensus between the two librarians.

Results

Responses – Centre for Nursing Studies

Four hundred and twenty-two responses were received from the CNS. A breakdown by year can be found in Table 2. Because of the differing exposures to IL training, the four surveyed groups were further refined to three cohorts (Table 2).

Confidence levels

When asked how prepared they felt to begin evidence-informed practice, 68.3% ($n = 75$) of the class of 2011 felt somewhat or very prepared while 78.5% ($n = 77$) of the class of 2012 felt somewhat or very prepared. As expected, the first-year classes did not feel very prepared with only 33.3% ($n = 72$) answering somewhat or very prepared to begin evidence-informed practice.

Next, the students were asked how confident they felt in their ability to perform specific tasks; the results can be seen in Table 3.

Information Literacy Skills

When asked to identify appropriate tools for locating scholarly research articles, a large increase in correct answers was seen among the three cohorts. Only 2.8% ($n = 6$) of the first-year students were able to correctly identify two appropriate resources. This percentage increased to 33.9% ($n = 37$) for the class of 2011 and 57.1% ($n = 56$) for the class of 2012.

In a group of questions that examined whether students could make appropriate decisions about the use of scholarly and popular literature, there was improvement overall between the first-year cohort and the two fourth-year cohorts. For example, when asked what type of literature one should use to help a patient better understand his or her condition, 29.6% ($n = 64$) of the first year students answered the question correctly, whereas 53.2% ($n = 58$) and 48% ($n = 47$) of the classes of 2011 and 2012, respectively, answered correctly.

Several questions focused on the students' ability to understand, identify, and evaluate study types and search results. Students at all levels had some difficulty in choosing types of studies (cohort, randomized controlled trial, cross sectional, case control) as part of their evaluation of search results. Only 9.7% ($n = 21$) of the first-year students, 14.7% ($n = 16$) of the class of 2011, and 12.2% ($n = 12$) of the class of 2012 were able to correctly identify the definition of a cross sectional study. However, students in the two fourth-year cohorts did significantly better (41.2% ($n = 45$) of the class of 2011 and 49% ($n = 48$) of the class of 2012) than the first year cohort (6.9% ($n = 15$)) when asked what kind of study they should look for to answer a therapy question. Similarly, when asked to determine question type for a given question, students from the class of 2012 showed the highest percentage of correct answers with 70.4% ($n = 69$) answering correctly as opposed to 19.9% ($n = 43$) of the first-year students and 62.3% ($n = 68$) of the class of 2011.

The students were also asked several questions about PICO. They were given a scenario and asked to pick out the appropriate PICO components. No students in the first-year classes or in the class of 2011 got all four components right, whereas 11.2% ($n = 11$) of the class of 2012 were able to correctly identify all four PICO components. Similarly, only three first-year students (1.4%) and one student (0.9%) in the class of 2011 were able to correctly identify any of the PICO components, whereas 32.7% ($n = 32$) of the class of 2012 were able to identify one or more components. Next, students were asked to create an answerable question from the PICO components identified in the previous question. The fourth-year cohorts did slightly better with this question, with 11.9% ($n = 13$) of the class of 2011 and 11.2% ($n = 11$) of the class of 2012 writing an acceptable question. Only 3.7% ($n = 8$) of the first-year cohort came up with an appropriate question.

Students were asked to identify three criteria for evaluating websites. Again, the fourth-year students performed better at this task, with 28.4% ($n = 31$) and 30.6% ($n = 30$) of the classes of 2011 and 2012, respectively, providing three correct answers, compared with only 8.3% ($n = 18$) of first-year students.

For the final question, students were given a research question and four possible search statements. They were asked to select the search statement that would produce the

Table 2. Cohorts and amount of IL received (CNS).

Cohort	Students in cohort (no.)	IL sessions attended
Class of 2011	109	Sessions meant for first and second year
Class of 2012	98	Sessions meant for first, second, and third year (all)
Classes of 2014 and 2015	215 (98 and 117, respectively)	None (will eventually receive all)

Table 3. Confidence in specific skills*.

	First year students		Class of 2011		Class of 2012	
	Not confident (%)	Confident (%)	Not confident (%)	Confident (%)	Not confident (%)	Confident (%)
Reading research	73.1 ($n = 158$)	26.4 ($n = 57$)	12.7 ($n = 14$)	86.4 ($n = 95$)	78.6 ($n = 77$)	21.4 ($n = 21$)
Selecting resources	52.3 ($n = 113$)	46.8 ($n = 101$)	27.3 ($n = 30$)	72.7 ($n = 80$)	69.4 ($n = 68$)	30.6 ($n = 30$)
Searching for evidence	51.9 ($n = 112$)	48.1 ($n = 104$)	30.0 ($n = 33$)	70.0 ($n = 77$)	57.1 ($n = 56$)	42.8 ($n = 42$)
Identifying research types	41.7 ($n = 90$)	57.9 ($n = 125$)	39.1 ($n = 43$)	60.9 ($n = 67$)	58.2 ($n = 57$)	41.8 ($n = 41$)

*"Not at all confident" and "not quite confident" were combined into the "Not confident" column. "Somewhat confident" and "very confident" were combined into the "Confident" column.

best results; 28.4% ($n = 31$) of the class of 2011 and 27.6% ($n = 27$) of the class of 2012 correctly identified the best search statement, whereas only 20.8% ($n = 45$) of first-year students correctly identified the best statement.

Discussion

Overall, the results showed improvements in skills from first to fourth year, but not as improved as the anecdotal information from faculty would indicate. Faculty reported that students no longer come to them with complaints that there isn't any information on the topic they have been given to research, instead recognizing that they have to go back and look again at their search terms. Faculty also reported that student papers had improved. Finally, faculty continue to devote class time for IL sessions each semester, indicating recognition of their value. Indeed, other course instructors have asked to supplement the core content of the IL program with additional, course-specific IL instruction.

As expected, the class of 2012 felt more prepared than the class of 2011 or the classes of 2014 and 2015 to begin evidence-informed practice, but when looking at individual skills, the reported confidence levels were surprising. When asked to rank their confidence in their ability to perform research actions, confidence levels rose between first-year students and the class of 2011 but decreased between the class of 2011 and the class of 2012. It was expected that the class of 2012 would be the most confident as they had received the most IL classes. This may be explained by the thinking "the more you know, the more you know you do not know".

The results of the cross-sectional study definition question were disappointing and indicated that perhaps more time needs to be spent examining study types. For other questions involving study designs and question types, material covered in the third year of the curriculum, the class of 2012 had higher percentages of correct answers than the other two cohorts. This was expected because they had more IL instruction in that area.

At the time of taking the survey, the class of 2011 had not yet received the IL session on using PICO and searching for evidence, whereas the class of 2012 had. As expected, neither the first-year students nor the class of 2011 could answer the PICO questions but unexpectedly, the class of 2012 did not perform well on these questions either, although they did show some improvement. It is unclear why these results were received, but they indicated that more time should be spent on defining the PICO components and designing an answerable question.

Evaluating websites is taught in the second year of the curriculum so both the classes of 2011 and 2012 would have received instruction in this area, whereas the first-year students would have not. The results of the questions relating to website evaluation were, therefore, not surprising with an increase being seen between the first-year cohorts and the fourth-year cohorts and no real increase between the two fourth-year cohorts.

The last question tried to force students to think about search strategies in a different way by asking them to choose the strategy that would give the most relevant results for a sample research question. There was some improvement between the first-year students and the fourth-year students, but the fourth-year students still did not perform well on this question. This was a particularly challenging question, because students were being asked to "reverse their thinking" about the rules of searching; this may partially explain the low performance at all levels. However, poor performance also suggests that more focus needs to be placed on defining the search components, questions, and search strategy, reinforcing the conclusions from the PICO questions.

Limitations

There were a number of challenges and limitations that arose throughout the course of this research, the largest of which was the response rate from the HSC. A number of factors may have contributed to this including the method by which the instrument was disseminated. At the HSC, the survey was distributed via email rather than in class as it was at the CNS.

Over the course of the study, researchers at the HSC employed a number of strategies to try to promote and increase participation. For example, prizes (a nursing watch and gift card for uniforms) were selected based on consultations with students and were advertised to all potential participants. Despite positive reassurance from students regarding the prize selections and their motivation factor, the response rate did not increase significantly.

One limitation encountered with the CNS methodology was that when analyzing survey responses, it appeared students might have worked together as some answers were suspiciously similar to those next to them in the paper pile. Also, although it was communicated to students that participation in the survey was not mandatory, because it was administered in class students may have felt pressured to participate.

A desire to test the learning outcomes thoroughly may have, in fact, contributed to the low response rate at the HSC due to both the length of the instrument and the challenging nature of some questions. A better approach might have been to create a shorter survey with a limited number of questions; to cover all learning outcomes, each student could be given a random selection of three or four questions from a complete list.

No statistical analysis was performed on the results, leaving only descriptive statistics. Although this may not be a disadvantage in itself, statistical significance of results cannot be claimed.

Lastly, this survey was specific to the course-integrated curriculum at the Memorial University of Newfoundland School of Nursing and the Centre for Nursing Studies, so results may not be widely generalizable.

Future Directions

As this research has been ongoing for just over four years, many potential directions have been discussed for future research opportunities and ways to improve the information literacy component of the Bachelor of Nursing degree program. Perhaps most significantly, lessons have been learned that will direct the program in the next few years. The results have indicated that more focus needs to be placed on defining the search problem, identifying

appropriate PICO components, and designing applicable search strategies. Although qualitative analysis was not performed on the survey comments, a few general themes stood out. It would seem that students place a great deal of value on the IL sessions, but would like to see them happen earlier in the curriculum and more at the point of need. Efforts will be made to adjust the program accordingly.

A possible next step in this research process might be to perform pre- and post-tests on students at the HSC, preferably in the classroom, to maximize response rates. At the CNS, students were given unique identification numbers when completing the surveys so that it would be possible to survey the first-year students again when they are in fourth year, to see if individual marks improve as they receive more IL instruction. Further investigation in this area might potentially yield interesting results.

Given all of the anecdotal evidence heard from faculty members suggesting that increased IL results in better papers and more confident students, it would be interesting to hold focus groups with faculty members to obtain formalized qualitative information on their perceptions of student skills in the area of IL.

Conclusion

At the outset of implementing a curriculum integrated multiyear information literacy program into a BN degree program, it is vitally important to plan for the assessment of said program. A multiyear study was designed and implemented aiming to show that as students had more IL instruction, their confidence and actual skills would improve. From the results presented, it can be seen that some improvement was noted, but not as much as had been expected. From these results, ideas of how to improve the IL program have been gleaned and will now be implemented in sessions going forward. This research can also be used to provide evidence to nursing faculty on the improvement of both confidence to begin evidence-informed practice and actual information literacy skills as an indication of value of curriculum-based IL instruction.

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Appendix A

BN Information Literacy Questionnaire - (Fall 2011)

1. Please Respond to the following statement before completing the survey:

"I expect to graduate in spring or fall 2012"

○ YES
○ NO

2. How prepared do you feel you are to begin evidence-informed practice in a clinical setting?

○ Very unprepared ○ Somewhat unprepared ○ Somewhat prepared ○ Very prepared

3. If you selected either "somewhat prepared" or "very prepared" in question #2, what experiences from your four years of nursing prepared you for evidence-informed practice? Please describe:

4. What could we have done that we didn't do to better prepare you for evidence-informed practice?

5. Please rank your confidence in your ability to perform the following actions:

	Not at all confident	Not quite confident	Somewhat confident	Very confident
Reading and comprehending research based studies	○	○	○	○
Selecting and evaluating resources for patient use	○	○	○	○
Efficiency in searching for and locating evidence-based literature	○	○	○	○
Identifying and knowing when to use different research study types	○	○	○	○

6. You are doing research to find out how adolescent attitudes toward risk-taking affect recreational drug use. You have already searched CINAHL.

   Where would you look next to find more scholarly research articles on your topic? Name two databases:

1. _____

2. _____

7. Indicate whether each of the following statements is true or false:
Medical Subject Headings are useful because they…

	True	False
…are used in all healthcare databases.	○	○
…are comprehensive, retrieving everything on that subject, regardless of the terminology used in the article.	○	○
…are specific, retrieving only things that are about that subject, and avoiding things that mention your terms in passing or use them in a different way.	○	○
…provide a quick and easy way to find a few useful articles.	○	○

8. Name three characteristics of a scholarly, research-based study.

1. _____
2. _____
3. _____

9. You are searching for information to answer a therapy-type question (e.g. "Is St. John's wort as effective as traditional antidepressants for treating moderate depression?"). What is the best kind of study to look for?

○ Cohort study
○ Randomized controlled trial
○ Cross sectional study
○ Case control study
○ Not sure

10. Beside each item, indicate whether it would be better to use a popular/trade or a scholarly/research source for this purpose:

	Popular/ Trade	Scholarly/ Research
A patient asks you to recommend some information that will help him to better understand his medical condition.	○	○
You are trying to decide between two different approaches for treating a patient, and want to find out which one has the better patient outcome.	○	○
You are preparing a proposal for a new way of preventing medication errors, and are seeking evidence to support your arguments.	○	○
You are looking for a source that will help you keep up-to-date on the latest trends in your profession.	○	○

11. A cross sectional study is:

○ A study to determine prevalence and (or) distribution of a disease in a population.
○ A study where participants are randomly allocated to receive one of two or more interventions.
○ A study of a certain outcome among different groups of people who are similar in all but one characteristic.
○ A statistical technique which combines the results of several studies that ask the same or similar research questions.

12. From the following case, identify each of the PICO components:

"A sexually active 17 year old female comes to you with questions about birth control. She is very concerned about getting pregnant and tells you she has a friend who got pregnant while on the pill. She is wondering if she should be using Depo-Provera instead. You decide to search the literature to see which is more effective."

P_____

I_____

C _____

O _____

13. Now, using the case given in question #12, compose an answerable question you might use to guide your search:

14. Read each of the following questions and identify the question type:

	Therapy	Diagnosis	Prognosis	Etiology	Not sure
"In children who are exposed to passive smoking, what is the risk of developing respiratory disease?"	○	○	○	○	○
"In a patient with suspected cholecystitis, which test should be ordered: an ultrasound or a cholescintigraphy?"	○	○	○	○	○

15. As a healthcare professional, which of the following resources is the best place to look for information on complementary or alternative treatments (e.g. Using Ginkgo, a herbal product, for treatment of sexual dysfunction)?

- ○ Jamieson's Natural Products
- ○ eCPS
- ○ Natural Standard
- ○ UptoDate

16. As a health care professional, which of the following resources is the best place to look for information on correct dosage for drugs approved for medical use in Canada?

- ○ Pfizer Canada
- ○ eCPS
- ○ Natural Standard
- ○ UptoDate

17. You want to refer a patient to some reliable, straight-forward websites about type II diabetes. You have done a search and found several sites that you are thinking about recommending. Name three criteria that you would use to evaluate each site and decide if it is appropriate:
    1. _____
    2. _____
    3. _____
18. Now, name three things that might lead you to decide NOT to use a website for the purpose described in #17:
    1. _____
    2. _____
    3. _____
19. Which of the following search statements will get the best results for the following topic: "What are the effects of touch therapy for premature infants?"

○ (effect* OR touch) AND (baby OR babies OR infant OR infants)
○ (baby OR babies OR infant*) AND (preterm OR premature) AND touch
○ touch AND pre* AND (bab* OR infant*)
○ touch therapy AND premature OR (baby AND babies AND infant*)

20. OPTIONAL: Thank you for participating in our study! If you would like to enter a draw to win one of our great prizes (each prize consists of a gift certificate to Mark's Work Wearhouse and a nursing watch), please submit your name and email address:

Name: _____

Email Address: _____

CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

ASTED-Santé et services sociaux

The Quebec chapter of CHLA (ASTED 3S), which is the Quebec provincial network of health libraries, organized a continuing education training day that took place on 7 June 2013 at the Montreal Jewish General Hospital. The subjects discussed were the recent amendments to the Canadian Copyright Act, the use of mobile apps in healthcare, and an introduction to evidence-based medicine. The use of videoconference for the first time was very successful, permitting librarians from outside of Montreal to participate. More than 50 participants attended.

The Quebec chapter of CHLA as well as 10 people from the University of Montreal and McGill University are working together to organize next year's CHLA/ABSC conference.

Our chapter continued developing a blog as a communication tool for its members (http://www.asted3s.info/). In 2013, 25 posts were published and 536 visits were made. This blog is a complement to our electronic discussion list that holds more than 200 participants. It also gives access to the electronic phone book including 60 Quebec health-related libraries.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

Health Libraries Association of British Columbia (HLABC)

Although the Health Libraries Association of BC had a quiet summer (who could blame us with the sunniest summer on record for BC?), we're still basking in the success of our last Annual General Meeting (AGM) and Continuing Education (CE) day last June. We held a full-day CE session on Statistics, with an AGM lunch to break things up. Our morning was spent with Dr. Penny Brasher who led "Statistics Bootcamp 101 for health librarians and library technicians", and the afternoon was yet another amazing session presented by librarians from Simon Fraser University on "Making Sense of Health Statistics". For more information, including slides from the presentations, visit our website at http://chla-absc.ca/hlabc/.

We're in the midst of planning our Fall General Meeting, and are looking forward to a great year of networking, learning, socializing, and planning an amazing CHLA conference for everyone here in Vancouver for 2015.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

The Manitoba Association of Health Information Providers (MAHIP)

The Manitoba Association of Health Information Providers (MAHIP) was very active in 2012–2013.

Three journal clubs were held in 2012–2013. A critical appraisal checklist was utilized to assist in appraising articles and guiding discussion (Glynn L. A critical appraisal tool for library and information research. *Library Hi Tech*. 2006; 24(3): 387–399). In 2013–2014 we will continue to evaluate the process of journal club facilitation, implement an evaluation form, and review additional journal club facilitation guidelines.

Since 2010, library associations in Manitoba have been assessing the current structure of library associations and determining support for the creation of an umbrella library organization. MAHIP held a members meeting on 19 September 2012 to discuss MAHIP's potential involvement in such an association. MAHIP's President and Vice-President attended three meetings of the Manitoba Library Associations Working Group. A sub-committee of the Working Group was created to draft an organizational structure reflecting the needs of all participating associations. Results from the sub-committee are still pending.

In 2012, Ada Ducas, Kerry Macdonald, and Lisa Demczuk received CHLA/ABSC's Chapter Initiatives Grant for their research on "Benchmarking Canadian Health Facility Libraries". Their research is now complete and they presented their findings at the 2013 CHLA/ABSC conference in Saskatoon. Their final report is available at: http://www.chla-absc.ca/system/files/MAHIP_CIF_final report.doc

A MAHIP member's meeting was held on 3 April 2013 to consult on proposed amendments to MAHIP's constitution. Amendments were voted on and accepted at the Annual General Meeting, and they included: adding a retired member option, clarifying voting rights of institutional members, adding the position of Past President, and extending the terms of Secretary and Treasurer from one-year to two-year terms.

MAHIP's Annual General Meeting was held on 18 June 2013. The new executive for 2013–2014 include: Orvie Dingwall, President; Mê-Linh Lê, Vice President; Andrea Szwajcer, Past President; Sherri Vokey, Treasurer; and Caroline Monnin, Secretary.

MAHIP has a new website at www.chla-absc.ca/mahip thanks to MAHIP's webmasters Christine Shaw-Daigle and Melissa Raynard who migrated the website from WordPress.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

Maritimes Health Libraries Association (MHLA) / Association des Bibliothéques de la Santé des Maritimes (ABSM)

Summer was a quiet time for MHLA members after a busy spring that included the MHLA spring meeting in Moncton, as well as members presenting at the CHLA Conference and Medical Library Association (MLA) Conference in Boston, which because of its proximity had a strong maritime contingent present. Amanda Horsman and Michelle Helliwell presented a well-received poster at MLA on MHLA's strategic planning process. Behind the scenes, the Executive continues to work on the *MHLA Statement of Accountability and Ethics* document, which the association hopes to adopt at our fall meeting in Halifax this upcoming October.

Robin Parker, MHLA Treasurer, attended the association's day at the Dalhousie School of Information Management to chat with students about MHLA and CHLA. We are now busy planning for our Fall meeting in Halifax, which includes an information session for students curious about health librarianship, an informal poster session (a first for us), as well as our planned Continuing Education session on evaluation for libraries with Dr. Sarah Bowen of the University of Alberta School of Public Health.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

Northern Alberta Health Libraries Association (NAHLA)

The Northern Alberta Health Libraries Association (NAHLA) had an active year with three Leading Edge sessions, two social events, and its annual NAHLA Trends Mini-Conference. A highlight of the conference was presenter Dr. Steven Aung, a pioneer in the integration of western, traditional Chinese, and complementary medicine, who spoke on "Integrated Compassionate Medicine for the 21st Century and Beyond". This winter, we will be offering a workshop on systematic review searching to build capacity among our members. Our membership remains very healthy, and we have had strong student representation as a result of our presentation to School of Library and Information Studies (SLIS) students at the University of Alberta. At NAHLA's Annual General Meeting in September, we elected a new Vice President, Maria Tan, and Secretary, Erica Lenton.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

Northern Lights Health Libraries Association (NOLHLA)

The Health Sciences Library at the North Bay Regional Health Centre is now part of the Research department in the portfolio of the Vice President – Academics and Quality (Librarian Bonnie Brownstein). Librarian Jami van Haaften from Health Sciences North (Sudbury) has entered her last year as an active member of NOLHLA, as she is planning for a 2014 retirement. The group is looking forward to an education–social meeting in the fall, during which members will present on several areas of knowledge.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

Southern Alberta Health Libraries Association (SAHLA)

Recognizing the increasing prevalence of mobile technology in healthcare, SAHLA held a "Point of Care on the Go: Mobile Clinical Decision Making Tools" session at the University of Calgary's Health Sciences Library on 5 September 2013. Delivered by Helen Lee Robertson, attendants learned about the latest Point of Care tools available in a mobile environment and their use by medical students, residents, and faculty. Helen's passion and interest in the area of mobile devices led to her collaboration with co-authors from the University of Alberta, University of Ottawa, and McGill University on a project entitled "What are they really doing on that smartphone? How medical students, residents, and faculty use their mobile devices", presented by Helen at this year's Medicine 2.0 conference held in London, England. This paper was selected as a semi-finalist for the prestigious Medicine 2.0 Research Award.

SAHLA held its Annual General Meeting at the South Health Campus Wellness Centre on 29 October 2013, after which the South Health Campus staff provided an update on the programming they are currently offering.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

Saskatchewan Health Libraries Association (SHLA)

The Saskatchewan Health Libraries Association was busy this spring preparing to host CHLA 2013 here in Saskatoon, Saskatchewan. It was with great pleasure that we were able to welcome delegates from across the country and even internationally (two delegates came all the way from England!). We took a break over the summer to enjoy the fabulous weather and in September we began gearing up for our Fall meeting that was held in Regina at the end of October. The agenda included plenty of learning (Continuing Education sessions on Active Learning and on Emerging Technologies), a bit of business, and plenty of socializing and networking, including a long-awaited CHLA 2013 windup dinner. Amy Weisgarber (library technician at Regina Qu'Appelle Health Region) is redesigning our SHLA website and we are working on updating our logo.

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CHAPTER HIGHLIGHTS / FAITS SAILLANTS DES CHAPITRES

Toronto Health Libraries Association (THLA)

The Toronto Health Libraries Association (THLA) got off to a great start this year with a program planning meeting held in early August. We look forward to a year of great activities including starting off our year by celebrating Canadian Libraries Month; Medical Librarian's Month; and Health Literacy Month in October with a joint event with the Health Sciences Information Consortium of Toronto (HSICT). This event included a tour of the brand new Bridgepoint Hospital (and library) as well as a social and networking opportunity. In December we will join our colleagues in the local Special Libraries Association Chapter as well as other associations for our annual holiday social and in the New Year we will again collaborate with HSICT on a professional development event focusing on copyright issues.

With the joint MLA/CHLA conference coming to our city in 2016 this is an exciting time for health librarians in Toronto and we are planning a membership drive this year. If you have friends or colleagues moving to Toronto, please tell them to get in touch!

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IN FOCUS / EN PROFONDEUR

Featuring: Tim Tripp

Director, Library Services, Centre for Addiction and Mental Health
Degrees and professional designations held: BSc, MLIS

Tell us about your current position

I've been in my current role only a few months now, so I'm still learning about it! The Centre for Addiction and Mental Health (CAMH) and its library is a fascinating place to work. There's much that you would find typical in a library for an academic teaching hospital, but there's much that's unique as well. Focussing on a patient population that has mental health and addiction issues is a real eye-opener. I find it's totally changing my perspective on much of news and even pop culture – once your awareness has been raised around issues of stigma, language, trauma, etc., you can't help but place a different lens over everything that you look at.

It's been a while since I've worked in an actual library, so it's fun getting re-acquainted with that world. There's the more mundane – we just completed our annual subscription cancellation, er, I mean renewal, process. And then there's the truly exciting – we've just kicked off planning for brand new space in a building that is yet to be built. We'll spend three years planning and then three years building, and if all goes according to plan, we'll be moving into a brand new space at CAMH's Queen Street West campus in downtown Toronto in 2020. The new space should be amazing – we'll be sharing ground floor space right on Queen St. West with the new student centre, conference centre, and Workman Arts theatre.

There really is a transformation happening all across CAMH. It's impacting everything from the physical spaces to clinical practice. I think the next decade here is going to be a blast!

Your previous positions have been quite information technology (IT) intensive. What made you decide to move into a new role? How does your previous IT experience inform your work as the Director of Library Services at CAMH?

The last 13 years I've been in a "nontraditional" role, that's true, but I've always thought I'd return to the library world at some point. I've always loved the field, which is why I maintained my connections, primarily through my involvement in CHLA, with health librarians across the country. It's not often an opportunity like this comes along, so I jumped at the chance. I think having IT experience is a definite benefit. So much of what we do is dependent upon technology that it really streamlines things when your IT folk know that you understand their language and their constraints.

Having that background allows me to participate in other projects that are going on within Education at CAMH. There are a number of technology heavy projects around portal development and mobile app development that I'm just starting to get involved with, but I think the variety of work that I'm going to be getting involved with is incredible.

What do you find most interesting about your work?

I'm still in that honeymoon phase, so all of it's interesting! I mentioned the variety already, but some days I have to sit back and just marvel at the type of things I get to take part in: designing new spaces, strategic planning, and learning about the subject areas in addictions and mental health… The CAMH Archives also report to me, which is really cool. Learning about the history of our founding organizations as well as that of psychiatry is fascinating.

What has been your greatest professional challenge?

I think my greatest challenge is just beginning! I've always advocated for the importance of libraries and librarians, but working in IT, I've never really been on the hook to demonstrate that value. That's just changed for me – big time – especially in a time when libraries themselves are transforming. Planning for a new library space is bringing this home for me – what should a library look like in 2020? Given that we're going to be given prime real estate, how much of that space, if any, should be given over to print collections that are being less and less used? If our real value is our expertise, then how do you build a library space to feature that? I've got a bit more time to try to come up with some ideas, but not a lot!

How did you become interested in medical librarianship?

Let me answer that in two parts. I became interested in librarianship when I realized near the end of my undergrad that I didn't actually want to be a marine biologist. I switched to part-time studies and got a part-time clerical job in the university library. By the time I'd graduated, a full-time, paraprofessional position came up on the science floor, so I applied and got the job. I fell in love with doing reference work there, teaching people how to find answers to their questions. After a couple years, I decided to go to library school so I could advance. What drew me to health libraries was my hatred of commuting! I was living in downtown Toronto, but working in Brampton. When one of the downtown teaching hospitals was looking for a project manager to implement their virtual library, my first thought, was that I could walk to work! In preparing for that job interview, though, I became fascinated by the potential for technology to be able to integrate knowledge or evidence at the point of care. I still am.

What was your background before you became a medical librarian?

Most of my undergrad was in marine biology. I grew up on Jacques Cousteau documentaries and always wanted to join the crew of the Calypso! Thank goodness for field courses. A few weeks on the Bay of Fundy weighing sea urchins made me realize that a life devoted to the scientific method wasn't for me. So after falling in love with librarianship, and getting my MLIS, I worked for a while at CISTI, and then took a job at Spar Aerospace, managing the library there. In 1999, I left Spar (which had then become MD Robotics) for the University Health Network as a project manager in their IT department, where at one point I was managing a software development group with about 30 staff.

What would you be doing if you weren't a librarian?

At this point in my life, if I hadn't found such an engaging job, I'd probably be a farm hand! Well, a farm hand of sorts. A friend of mine recently fulfilled his dream of opening a dog psychology and rehabilitation centre in the country. He's doing amazing work and has already saved a couple of beautiful animals in the month he's been there. I was very tempted to say good-bye to the city, and move out there to help him and his wife run the place. Imagine a job where bringing your dog with you isn't just allowed, but considered mandatory. I'm still holding out for that as a retirement option!

You've been involved with CHLA/ABSC for several years and were instrumental in developing much of the Association's online presence as the webmaster several years running. How did things look when you started, and how did they evolve over the years? Do you have any thoughts on the future potential of online media to further the mission of library associations?

Back when I started, there was still very much a dependence on "big IT" for lack of a better phrase. There's been a huge democratization in technology – really enabling a more DIY-type culture. You no longer need to depend on IT for solutions to your problems. If you need to do something on the web, chances are that "there's an app for that" which will help you do what you need to do.

What other organizations are you involved in?

Being in Toronto provides an embarrassment of riches when it comes to other professional associations. I'm currently a member of Toronto Health Libraries Associaion (THLA), and as a teaching hospital library, all of us in the CAMH Library are involved with the Health Sciences Information Consortium of Toronto. I'm looking forward to joining SALIS – the Substance Abuse Librarians and Information Specialists and am re-evaluating other potential association membership now that I'm back in an actual library setting. I also sit on the board of my condo corporation.

Whom do you admire, and why?

Maybe it's because I need to figure out what a library should look like in the 21st century, but I find myself reading a lot of Stephen Abram's writings. He's visionary to the extreme, but it's great fun to try to imagine what he's seeing! He's an incredible advocate for libraries and his enthusiasm is energizing!

Tell us about some of your hobbies

I'm really a geek at heart. I like playing with technology and maintain some websites, such as the one for my condo. I watch an unhealthy amount of television! And, I love mid-century design – especially in furniture and architecture.

What is your favourite place in Canada, and why?

I can't pick just one. I love every city I've ever lived in, Guelph, Halifax, Ottawa, Toronto. I also love the north and our rural areas. We have such a treasure of spaces in this country. But I can't think of favourite places without thinking of the people there that I've loved – friends and family – that's what really makes a place special.

What advice would you give to a new member of CHLA or someone new to the field?

Well, if you're new to the field and NOT a member of CHLA, join now! Then, take advantage of the networking opportunities. You've got a great support group to help you make the most of your chosen career. Don't waste that opportunity!

We gratefully acknowledge the Medical Library Association's permission to adapt the question list from the MLA News Member Spotlight feature.

COLUMN / CHRONIQUE

The CHLA/ABSC Social Media Interest Group: the Creation of the Best Practices Social Media Portal

Dean Giustini, Laurie Blanchard, Judy Inglis, Marie-Marthe Gagnon, and members of the Social Media Interest Group

Introduction

Over the past few years, health librarians around the world have become involved in a range of exciting and innovative projects using social media [1–5]. In Canada, apart from speaking about a social media project at a conference or publishing a paper in JCHLA/JABSC, health librarians have lacked informal spaces to share their experiences and success stories in using these tools.

To address this problem, a small group of CHLA/ABSC members – Laurie Blanchard (acting as Board liaison), Judy Inglis, and Dean Giustini – began discussing ways in which health librarians could learn more about or become more comfortable with the use of social medial tools in their daily information practice. Thus, the concept of a Social Media Interest Group was born, and terms of reference were drafted. After the terms of reference were accepted by the CHLA/ABSC Board, the group began to recruit new members through our personal social media contacts and the CANMEDLIB listserv. The interest group held its first face-to-face meeting in conjunction with the CHLA/ABSC Annual Conference in Hamilton in 2012.

Throughout this formative period for the Social Media Interest Group, Board members continued to emphasize the importance of creating a space to share best practices and provide value for members. Based on these discussions the interest group has focused its energies on creating a portal that can be easily accessed on the CHLA/ABSC website.

The aim of a social media portal

The aim of the CHLA/ABSC portal is to provide an easily accessible space to share ideas, program descriptions, resources, and best practices. Currently, there are several projects described on the portal. Are you interested in seeing how other health librarians are using social tools? Do you have a project you'd like to share? Health librarians considering the use of a specific social media tool can learn a lot by examining these projects and by talking to the librarian who used them. The platform is designed to provide a vehicle for interaction, virtual networking, and information exchange, without the constraints associated with the formal (and sometimes intimidating) venues such as writing a paper or presenting at a conference. It is anticipated that use of the platform may also provide some contributors with the support and encouragement needed to consider publishing and presenting their work.

What does the social media portal contain?

- The portal, which can be found at http://www.chla-absc.ca/search_best_practices, includes a searchable database of social media projects and initiatives of interest to Canadian health librarians.
- Future goals for the portal are to include links to guidelines, policies, training objects, and other resources related to the development, implementation, and evaluation of social media tools and applications.
- Contributions to the database may include (but are not limited to) descriptions of the use of social media tools and resources in a health library and (or) information services setting, tools or methodologies used for evaluating social media, checklists, "lessons learned", evaluations of exemplary information tools, and portals of interest to health librarians
- The portal has both French and English interfaces; contributions can be made in either official language.

Official launch at the 2013 Conference

The portal had its official launch at the 2013 Saskatoon Conference. Laurie Blanchard provided an overview of the portal during the AGM, and Pat Lee and Dean Giustini presented audience members with a social media portal bookmark and invited everyone to contribute to the portal, make use of portal content, and provide suggestions and feedback for enhancements. The initial response to the portal has been positive – the best practices database now contains 10 descriptions of tools, programs, and initiatives.

Marketing and promotion

As well as more traditional approaches, the Social Media Interest Group will be using a variety of social media approaches to market, promote, and evaluate the use and usefulness of the portal. Watch for a more detailed discussion of these approaches in a future column.

How can you get involved?

Please help develop and promote the portal by taking a few minutes to:

- contribute to the database and tell us about your initiatives and experiences;
- find projects and information relevant to your needs; and
- tweet and blog, tell your colleagues about the portal.

Need more information, or have suggestions for content, features, or enhancements for the portal? Contact us at: socialmedia@chla-absc.ca

In the meantime, you can follow some of our activities on Twitter by using the hashtags #somedport #chlaabsc

Members of the Social Media Interest Group

Laurie Blanchard, Judy Inglis, Dean Giustini, Pat Lee, Marie-Marthe Gagnon, Teodora Constantinescu, Kathryn Ranjit, Angela Osterreicher, Helen Lee Robertson, and Michelle Swab

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COLUMN / CHRONIQUE

Current Research

Compiled by Christie Hurrell

Austvoll-Dahlgren A, Danielsen S, Opheim E, Bjørndal A, Reinar LM, Flottorp S, Oxman AD, Helseth S. Development of a complex intervention to improve health literacy skills. *Health Information & Libraries Journal*. 2013. [Epub ahead of print]. doi: 10.1111/hir.12037.

Background: Providing insight into the developmental processes involved in building interventions is an important way to ensure methodological transparency and inform future research efforts. The objective of this study was to describe the development of a web portal designed to improve health literacy skills among the public. **Methods:** The web portal was tailored to address three key barriers to obtaining information, using the conceptual frameworks of shared decision-making and evidence-based practice and based on explicit criteria for selecting the content and form of the intervention. **Results:** The web portal targeted the general public and took the form of structured sets of tools. Content included: an introduction to research methods, help on how to find evidence-based health information efficiently based on the steps of evidence-based practice, an introduction to critical appraisal, information about patient participation rights in decision-making, and a decision aid for consultations. **Conclusions:** The web portal was designed in a systematic and transparent way and address key barriers to obtaining and acting upon reliable health information. The web portal provides open access to the tools and can be used independently by health care users, or during consultations with health professionals.

Buijink AW, Visser BJ, Marshall L. Medical apps for smartphones: Lack of evidence undermines quality and safety. *Evid Based Med*. 2013 Jun;18(3):90–2. doi: 10.1136/eb-2012-100885.

Increasing numbers of healthcare professionals are using smartphones and their associated applications (apps) in daily clinical care. While these medical apps hold great potential for improving clinical practice, little is known about the possible dangers associated with their use. Breaches of patient confidentiality, conflicts of interests, and malfunctioning clinical decision-making apps could all negatively impact on patient care. We propose several strategies to enhance the development of evidence-based medical apps while retaining their open nature. The increasing use of medical apps calls for broader discussion across medicine's organising and accrediting bodies. The field of medical apps is currently one of the most dynamic in medicine, with real potential to change the way evidence-based healthcare is delivered in the future. Establishing appropriate regulatory procedures will enable this potential to be fulfilled, while at all times ensuring the safety of the patient.

Charbonneau DH. Strategies for data management engagement. *Med Ref Serv Q*. 2013 07/01; 2013/09;32(3):365–74. doi: 10.1080/02763869.2013.807089.

The research landscape is growing dramatically, and librarians are examining new roles, services, and types of collaborations to support data-intensive research. This column describes curricular enhancements at one School of Library and Information Science in the United States. Several key areas of data management in which health sciences librarians may wish to build or enhance their skills are outlined. Possible roles and opportunities for health sciences librarians to strategically engage in data management initiatives are also presented.

Spievak ER, Hayes-Bohanan P. Just enough of a good thing: Indications of long-term efficacy in one-shot library instruction. *The Journal of Academic Librarianship*. 2013 [Epub ahead of print]. doi: http://dx.doi.org/10.1016/j.acalib.2013.08.013.

Website attributions were measured as one way of evaluating the efficacy of the "one-shot" library session. Survey results indicated support for single session information literacy instruction in that participants exposed to a librarian classroom visit reported that they would be significantly more likely to have used library databases, checked out a book, asked a librarian for help, and to predict that they would ask a librarian for help at a later time. Results also indicated that students who reported a classroom librarian visit may have engaged in more systematic or complex processing to evaluate websites in that they considered more attributes and took less time to make better judgments about the quality of sources.

Vodicka E, Mejilla R, Leveille GS, Ralston DJ, Darer DJ, Delbanco T, Walker J, Elmore GJ. Online access to doctors' notes: Patient concerns about privacy. *J Med Internet Res*. 2013 09/26;15(9):e208. doi: 10.2196/jmir.2670.

Background: Offering patients online access to medical records, including doctors' visit notes, holds considerable potential to improve care. However, patients may worry about loss of privacy when accessing personal health information through Internet-based patient portals. The OpenNotes study provided patients at three US health care institutions with online access to their primary care doctors' notes and then collected survey data about their experiences, including their concerns about privacy before and after participation in the intervention. **Objective:** To identify patients' attitudes toward privacy when given electronic access to their medical records, including visit notes. **Methods:** The design used a nested cohort study of patients surveyed at baseline and after a 1-year period during which they were invited to read their visit notes through secure patient portals. Participants consisted of 3874 primary care patients from Beth Israel Deaconess Medical Center (Boston, MA), Geisinger Health System (Danville, PA), and Harborview Medical Center (Seattle, WA) who completed surveys before and after the OpenNotes intervention. The measures were patient-reported levels of concern regarding privacy associated with online access to visit notes. **Results:** 32.91% of patients (1275/3874 respondents) reported concerns about privacy at baseline versus 36.63% (1419/3874 respondents) post-intervention. Baseline concerns were associated with non-white race/ethnicity and lower confidence in communicating with doctors, but were not associated with choosing to read notes or desire for continued online access post-intervention (nearly all patients with notes available chose to read them and wanted continued access). While the level of concern among most participants did not change during the intervention, 15.54% (602/3874 respondents, excluding participants who responded "don't know") reported more concern post-intervention, and 12.73% (493/3874 respondents, excluding participants who responded "don't know") reported less concern. **Conclusions:** When considering online access to visit notes, approximately one-third of patients had concerns about privacy at baseline and post-intervention. These perceptions did not deter participants from accessing their notes, suggesting that the benefits of online access to medical records may outweigh patients' perceived risks to privacy.

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BOOK REVIEW / CRITIQUE DE LIVRE

Face2Face: Using Facebook, Twitter, and Other Social Media Tools to Create Great Customer Connections. By King, D.L. Medford, NJ: CyberAge Books; 2012. Softcover. 216 p. ISBN: 978-0-910965-99-6, Price: $24.95 CDN. Available from: http://books.infotoday.com/books/Face2Face.shtml

We live and work in a highly social online world. In some ways, mixing and mingling with our clients online has never been easier. And yet, it's almost too easy! Libraries often create Facebook pages or Twitter accounts without giving much thought to the development or ongoing maintenance of their pages or accounts. How many libraries have thought carefully about how they want to portray themselves online, how they will respond to online criticism, or how they will measure the success of their online presence? Face2Face shows readers that with a little forethought and planning, they can create an effective online presence using social media tools.

The author, David Lee King, is the digital services director at the Topeka and Shawnee County Public Library in Kansas. He is also the author of *Designing the digital experience: How to use design tools and techniques to build websites customers love.* He maintains a blog at www.davidleeking.com where he talks about social media and emerging trends. King's work experience and online activity make him the ideal guide for those libraries and small businesses that want to explore use of social media tools or that already have a social media presence and want a refresher. King's conversational tone in Face2Face is aptly reminiscent of the online environment, making it feel like an enjoyable and entertaining Facebook chat with a friend or colleague.

In the first of 12 chapters, Face2Face reminds us that what we do so well in our libraries – listening, authentic communication, and sharing – can easily be applied in the online environment. King provides concrete examples of how to listen to what your clients are saying and how to engage in authentic communication online. He recounts a true story of a poorly managed corporation–client conversation on Facebook and analyzes that situation to show how it should have been handled. Chapters 2 through 4 focus on the basics of communicating and connecting with clients online through text, pictures, and videos. King discusses best practices for communicating online through tools such as blogs and social media sites. He also provides a wealth of practical tips on when and how to best use pictures and videos to provide maximum impact in whichever platform you are using. Chapter 5 is particularly useful in that it delves more deeply into listening to your clients online and, specifically, ways to listen, what to listen for, and how and when to respond – even if you do not have a social media presence. Chapter 7, titled Design and Face2Face Connections, is another gem in this book. It lists seven specific ways to incorporate client-centered design into your social media presence. Though this chapter is situated towards the end of the book, it would certainly be worth skipping ahead to read this chapter before you start creating your social media presence. It also acts as a great way to refocus and reassess for those who have had an active social media presence for some time. One of the most useful aspects of Chapter 8, titled Responding to Critics, is King's list of 10 tips on how organizations should respond to criticism in the online environment. The topic of evaluating your social media presence, covered in Chapter 11, is also extremely valuable in that it's a step we often overlook or feel we don't have time to undertake. The discussion on measuring success focuses on use of analytic tools; the chapter is organized into sections that cover why, what, and how we should measure.

One of the unavoidable drawbacks to writing about social media is the quick pace of change in the online environment versus the sometimes slow pace of publishing. King himself acknowledges this challenge and says "By the time you read this, at least one of these tools will have probably changed or closed shop" (pg. 81). However, Face2Face overcomes this issue by focusing not just on tools, but on information about communicating, connecting, listening, creating, and evaluating. Much of the information provided in this book can be applied to any platform you are using. Chapter 8 may be the only exception to this as it focuses on using specific tools. Even then, King chose to present the most common and well-established tools: Blogs, Facebook, Twitter, and YouTube. The other unfortunate shortcoming to this book is the lack of a recommended reading section at the end of each chapter. Face2Face is a quick read and I found myself wanting more in-depth information. For example, at the end of the chapter on measuring success, a list of further reading would have been useful.

David Lee King does a wonderful job of presenting an easy to read guide for libraries and small businesses wanting to create a social media presence or for those seeking to fine tune their current social media presence. Face2Face is a must have on the bookshelf because it is packed with practical information and is a quick and easy read for busy library staff or business owners.

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BOOK REVIEW / CRITIQUE DE LIVRE

Powering Search: The Role of Thesauri in New Information Environments. By Ali Shiri. Medford, N.J.: Information Today, 2012. Hardcover: 318 p. ISBN: 978-1-57387-454-0. Price: USD$59.50. Available from: http://books.infotoday.com/asist/Powering-Search.shtml.

Ali Shiri's comprehensive text *Powering Search* has done a remarkable job of consolidating research on thesaurus-informed search trends and practices, effectively bringing together examples and analysis from a variety of fields of study and user environments.

Each of the book's 10 chapters reviews research and trends in areas such as "Thesauri in Interactive Information Retrieval," "Design of User Interfaces for Multilingual and Meta-Thesauri," and "User-Centred Evaluation of Thesaurus-Enhanced Search User Interfaces." All the chapters provide rich reference lists, offering the novice reader an informed access point to the relevant literature. Indeed, the effect after completing a chapter is one of having just listened to an informative lecture – Shiri prefers to provide the reader with the breadth of the available literature on a topic rather than to argue in favour of a specific project or approach.

With chapters further subdivided into sections, some of which are quite small and specific, the reader is able to zero in effectively on information relevant to their situation. The chapter "Thesauri in Web-Based Search Systems," for instance, has separate sections on digital libraries, subject gateways, digital archives, and linked data repositories. The book also features a detailed index, extremely useful for locating information on a specific thesaurus. Although definitely reader-friendly, this is not a handbook on thesaurus construction, and anyone looking for "how to" information could be overwhelmed by the density of some of the discussions. That being said, the book does an admirable job of collocating guidelines, design principles, and construction standards, making it extremely useful for anyone looking for a solid grounding in the topic.

Throughout the book, Shiri makes use of several figures to illustrate his discussions, providing the reader with examples from a variety of search interfaces and thesauri representations. Although both the thesauri and the applications and visualizations depicted are drawn from a wide variety of sources, and would thus be of interest to those working in an equally wide variety of settings, many Canadian and many biomedical examples are used, making it very relevant to those working in the Canadian health information field. MeSH, unsurprisingly, is treated extensively. Platforms that will be relevant to many Canadian health library professionals are also discussed such as ProQuest, EBSCOhost, and Ovid.

Another useful feature of *Powering Search* is the comparative tables such as "Key findings, problems, and implications of usability studies" (Table 8.2), where after discussing several separate usability studies, Shiri distills his analysis into a simple table that allows the reader to compare the findings of several studies quickly.

Although Shiri generally takes on the role of a guide more than that of a persuader, he does make one strong argument throughout – it is time to stop looking at the issue of thesauri and their implications for searching from separate communities of research, such as information architecture, library and information science, usability studies, etc., but it is instead time to unify the knowledge base. He states in his conclusion that *Powering Search,* "has taken a new approach to thesauri by critiquing the relevant literatures of a variety of communities who share an interest in thesauri and their functions but who are not, it should be noted, closely collaborating at this time [. . .]" (p.291), and this extremely laudable goal makes *Powering Search* an invaluable resource.

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BOOK REVIEW / CRITIQUE DE LIVRE

The New Digital Scholar: Exploring and Enriching the Research and Writing Practices of NextGen Students. Edited by Randall McClure and James P. Purdy. Medford, New Jersey: American Society for Information Science and Technology, 2013. Hardcover: 399 pages. ISBN: 978-1-57387-475-5.

Today, students are inundated with more information than any previous generation. Many educators have voiced their frustration that the assimilation of information in a comprehensible method is superficial, at best. These students are then expected to disseminate the information from their research in a coherent written fashion. McClure and Purdy present a timely example of the struggle that NextGen students are currently facing, with practical applications to help them over this hurdle. This book is meant for educators and librarians who are committed to advancing and honing how students enter the research cycle and how they write about it. Though it is not specifically geared towards health librarianship, aspects of collaboration can be integrated into instruction.

The book is a collection of essays divided into four parts. Part 1 discusses literature that has already been collected on student research–writing behaviour and students' use of digital technologies for this task. Part 2 provides examples of students' actual practices, thereby providing data that give credibility to the literature previously described. Part 3 provides ways to respond to the practices revealed in Parts 1 and 2 through various pedagogical ideas. One example includes positioning students as knowledge workers, which is to position them as researchers, "since many knowledge work practices involve the exploration of problems within both local and distributed environments, with attention to the technologies that mediate such interactions" (Teston and McNely, p. 214). Part 4 illustrates collaborations and solutions that can be utilized by positioning students to become better researchers and writers. Together, these parts offer insight into the current state of NextGen students and their research–writing behaviours, while offering practical ways to help their ability to find textual information and effectively compose this information into something tangible, increasing their ability for critical thinking.

Part 1: NextGen Students and the Research Writing "Problem"

Chapter 1 sets up the discussion for the book surrounding NextGen students and their information behaviour. The author describes multiple perspectives regarding influences on students' research and writing decisions. In addition to this review of the literature, the author also suggests a framework in which educators (writing teachers, librarians, or other information specialists) can study these behaviours and skills of the new digital scholar. Chapter 2 discusses the history of the research writing assignment, which is the main method by which information behaviour is studied. This chapter highlights the importance of the research writing assignment, though it is controversial as the "gold standard" for judging information-seeking behaviour. The author concludes by stating that, presently, research needs a new definition that reflects the nature of research practices involving the digital environment. Chapters 3 and 4 echo the previous chapters in their call for a restructuring of the way educators are currently teaching research strategies to the new digital scholar. Chapter 3 highlights the collaboration between a librarian and a writing instructor by identifying several pieces of literature where information literacy calls upon the expertise of both library and writing professionals. The author of Chapter 4 illustrates the overhaul using an example from the hacker community, proposing that the act of personalizing one's digital environment would encourage a deeper connectivity and engagement that would drive an intrinsic motivation to improve one's own research–writing abilities.

Part 2: Explorations of What NextGen Students Do in the Undergraduate Classroom

These essays (Chapters 5–8) examine the empirical evidence surrounding the depth of student engagement with their research skills. This part uses qualitative data to analyze students' current research and writing skills. By investigating their research and information seeking habits, along with their research–writing patterns, writing instructors and librarians will have a better indication of how to adjust their instructional styles to better fit the NextGen student. Jamieson and Howard (Chapter 5) provide a particularly useful example in the United States, reporting on the Citation Project, "a national study of how college students incorporate sources into their work via four source-use techniques: copying, patchwriting, paraphrasing, and summarizing". The project allowed them to pinpoint the specific areas where students required the most help in the research–writing process at the college level such as misused source material (where the material was used but not cited) and improper paraphrasing which, in turn, demonstrated a direct need to change the existing nature of this type of instruction.

Part 3: Pedagogical Solutions to Enrich the Research and Writing Practices of NextGen Students

Chapters 9–12 discuss information behaviours that students are already demonstrating within their digital spaces, with evidence-based recommendations for information literacy instruction. Students are positioned as knowledge workers (Chapter 9), researchers–writers (Chapter 10), empowered learners (Chapter 11), and primary researchers (Chapter 12) as ways to perhaps direct their future roles within information literacy. By doing so, instructors and librarians are able to recognize and validate the student's input to the research cycle.

Part 4: Programmatic Solutions to Enrich the Research and Writing Practices of NextGen Students

In the last part of the book, Chapters 13–16 explore practical implementation techniques for the pedagogical approaches of the evidence-based information literacy teaching from Part Three. This part nicely revisits the themes from the previous chapters by incorporating potential activities such as understanding the distinction between forming a topic separate from the research question (Chapter 13), creating collaborations between librarians and writing instructions (Chapter 14), designing teaching habits that account for the "Google Effect," which is the near ubiquitous influence of Google on students' information seeking behaviour (Chapter 15), and going straight to the source: NextGen students (Chapter 16).

The editors of this book have brought forth an opportune collection of essays regarding the research habits of NextGen students. Much of the information provided discusses opportunities for librarians that have access to classes for longer than simply one-shot workshops. This poses a potential drawback, as most librarians have limited access in classrooms already; therefore, a push for a stronger collaboration between librarians and writing instructors in all disciplines would be necessary. McClure and Purdy acknowledge this limitation, and thus strongly encourage the collaboration between librarians and educators to facilitate the information translation to NextGen students for the research conversation. While the transition of the skills presented in this book will not occur overnight, it does give evidence-based examples that could be utilized in future collaborations between librarians and instructors regarding information literacy. In the end, it is a win–win situation for everyone: NextGen students enhance their skills and librarians and instructors strengthen their ties in the pursuit of providing a strong research foundation for these students.

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ERRATUM

Embedded Health Librarianship: The Canadian Landscape[1]

Liz Dennett, Trish Chatterley, Devon Greyson, and Soleil Surette

Ref: JCHLA / JABSC 34: 61_68 (2013) doi: 10.5596/c13-024

The correct title of this article is Research-Embedded Health Librarianship: The Canadian Landscape.

The publisher apologizes for any inconvenience this might have caused.

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