

Demonstrating the financial impact of clinical libraries: a systematic review

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Contributors

Initial planning and scoping was carried out by the full team. Electronic search strategies were devised by the team and carried out by PS, SMcG, LH, MP, KdeS, NO'B, DC, PC, AM. Hand searching was done by NO'B, AM. Critical Appraisal tool was selected by PC. MP identified the Time/Resources required. SMcG developed the Inclusion/Exclusion criteria. Title/Abstract screening was done by: DD, DC, LH, NO'B, SMcG, PC, PS, KdeS, MP, AM. Critical Appraisals were carried out by PC, MP, PS, DC, DD, NO'B, LH, SMcG, KdeS, AM. Final updated search was done by PS. AM wrote the document with review, editing, comments and amendments from all authors. Three members of the initial team had to drop out early but we would like to acknowledge their early participation. These were Alison Winning, Diane Kunichika and Hannah Prince.

We would also like to acknowledge the Medical Library Association Research team, who initiated this project.

Abstract

Objective: The purpose of this review is to evaluate the tools used to measure the financial value of libraries in a clinical setting.

Methods: Searches were carried out on ten databases for the years 2003 - 2013, with a final search before completion to identify any recent papers. The PRISMA Statement checklist was used to guide the different stages of the review. Studies were identified by systematically searching a range of databases which covered the healthcare, medical, library science, and health business research literature. Results of the literature search were assessed on the basis of predetermined inclusion/exclusion criteria. The final list of papers obtained through this process was then appraised. Descriptive findings from appraisals are included in the results table.

Discussion: To our knowledge, a review of economic evaluation tools appropriate for librarians in a clinical setting has not yet been carried out. This paper aims to identify any such tools and evaluate them for robustness and effectiveness.

Results: Eleven papers met the final inclusion criteria. There was no evidence of a single 'best practice' and many metrics used to measure financial impact of clinical libraries were developed on an ad hoc basis locally. The most common measures of financial impact were value of time saved, value of resource collection against cost of alternative sources, cost avoidance, revenue generated through assistance on grant submissions. Few papers provided an insight into the longer term impact on the library service resulting from submitting Return on Investment (ROI) or other financial impact statements.

Conclusions: There are limited examples of metrics which clinical libraries can use to measure explicit financial impact. The methods highlighted in this literature review are generally implicit in the measures used and lack robustness. There

is a need for future research to develop a standardized, validated tools which clinical libraries can use to demonstrate their financial impact.

Keywords: Libraries, Medical; Libraries, Hospital; Health Care Sector; Information Services; Evaluation studies as topic; Costs & cost analysis;

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Background

There is substantive subjective evidence of the positive impact of Library services in clinical settings e.g. ^{1,2,3,4}Bell 2009, Weightman 2009, Ayre 2015, Bartkowiak 2014. In surveys, library patrons state that information sourced through the Library is having a positive impact on patient care (Marshall 2014, Weightman 2005)^{5,6}. This impact is significant: in Marshall (2013)⁷, the list of adverse events reported to have been avoided as a result of the information received was stated to include: additional tests (19%), misdiagnosis (13%), patient mortality (6%), and hospital readmission (5%).

Despite this evidence, clinical libraries worldwide are facing insecurity and cuts to resources. Thibodeau (2009)⁸ highlights how “.....pressures are having an impact on the status of libraries, including the loss of staff, changing reporting structures, loss of space and resources, and consolidation within other hospitals.” Between 1999 and 2009 the Joint Commission International (JCI) removed the requirement for a medical librarian as part of their accreditation requirements (Klein Fedyshin, 2010)⁹. Between 2010 2009 and 2015 there has been a a 15% reduction in the number of library services provided by the NHS in England (NHS Library & Knowledge Services, 2015)¹⁰. During this time of change, If this depredation of healthcare library services is to be halted it is importantthere is an opportunity for library services to proactively demonstrate their financial impact to their organisations.

In a cost-driven environment, librarians require tools to demonstrate their financial worth to the organisation. This has to go beyond proving intrinsic value, impact or benefits but and must also provide a picture of its financial performance, focusing on cost savings, Return on Investment (ROI), or other cost benefits to the organisation. We have seen how well librarians have measured illustrations of studies that demonstrate intrinsic worth; this review sets out to identify tools used in clinical libraries which demonstrate their economic value.

Objectives

In 2013, the Medical Library Association (MLA) in the United States put out a call for volunteers to participate on in a teamteams to address the 15 research questions identified by the MLA research team through a three-part Delphi study (Eldredge 2012)¹¹. The original brief for this review was “How best to objectively document library/librarian impact on the “bottom line” (time, money saved, shorter length of stay, ROI for expensive electronic resources, support training programs, Magnet status (An American healthcare quality credentialing programme; see: <http://www.nursecredentialing.org/Magnet/ProgramOverview> for details), funded research support etc)?”

Following discussion, we had interpreted the question to mean: “A systematic review of the robustness of the measurement tools used to demonstrate the financial impact of libraries in a clinical setting”, aimed at addressing the following questions:

- In studies of the value of libraries in a clinical setting, what measures of value provide robust and objective evidence of financial impact?
- What is the strength of the evidence relating to measures of library value as identified in scholarly literature?

Our team, which was assigned to addressing this question, originally consisted of 13 participants with three having to drop out at an early stage. The review was carried out between April 2013 and December 2015Following team discussion, this was translated as: “A systematic review of the robustness of the measurement tools used to demonstrate the financial impact of libraries in a clinical setting”, aimed at addressing the following questions:

- In studies of the value of libraries in a clinical setting, what **measures of value** provide robust and objective evidence of financial impact?
- What is the **strength of the evidence** relating to measures of library value as identified in scholarly literature?

Methods/design

A systematic search was carried out on the following databases: PubMed, Health Management Information Consortium (HMIC), CINAHL, Health Business Elite, Emerald Management, LISA, LISTA, Library Literature and Information Science Database, Embase, and NHS Economic Evaluation Database, and the Cochrane Library.. Hand searches were carried out on the following journals: Health Information & Libraries Journal (HILJ), Evidence Based Library & Information Practice (EBLIP) and Journal of the Canadian Health Libraries Association (JCHLA). A search for grey literature was carried out on the Conference Proceedings of the MLA, the Chartered Institute of Library & Information Professionals (CILIP) Health Libraries Group, Canada Health Libraries, Australia Health Libraries, OpenGrey.eu and Google Scholar. The search strings were based around the following keywords: economics, cost benefit analysis, return on investment, “bottom line”, librarian, evaluation, measurement, empirical, hospital, and healthcare.

Inclusion criteria for this review included Evidence-based studies, case studies, reviews, research articles, evaluation studies, comparative studies, follow-up studies, prospective studies, statistical data studies, validation studies, questionnaires, clinical studies, RCTs, CCTs, and CTs.

Excluded were anecdotes, opinion-based papers, commentaries, letters, editorials, news articles, qualitative studies. Only English-language papers were included for the period 2003 – 2013. 2056 Two thousand and fifty-six papers were identified after de-duplication. These references were screened by title and abstract to establish relevancy. Each paper was checked and cross-checked by two members of the team. This process identified 63 papers as potentially relevant and meeting the inclusion criteria. The full text of the 63 papers was appraised using the CASP (Critical Appraisal Skills Programme) “Economic Evaluation” checklist. Each paper was independently appraised by two separate team members. Each appraiser was blinded to the outcome of the other appraiser’s evaluation. Appraisers excluded themselves from checking papers in which they might have a potential bias.

Results

After critically appraising the papers identified in the literature search, a total of eleven papers were selected for inclusion; a breakdown of the reasons for exclusion of the other 52 papers is provided in the flow chart (Appendix 2). Of the 52 papers rejected, 21 were considered to have some merit and will be discussed later in this paper.

To ensure that all steps of the Systematic Review process were completed, we used the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2009 checklist was used as a guide for the completion of the different stages of the review. A protocol for this paper is available in PROSPERO, registration no. XXXXXXXX (*See title page for actual reg. no.*) *This has been omitted as the protocol lists the authors.*

Below (Table 1) is a summary of the 11 included papers with comments from the team relating to the two key issues – what measure was used to demonstrate value, and how robust is the evidence underpinning these studies?.

Title	Study Objective	Strength of evidence (based on “Nursing Resources: Levels of Evidence (I-VII)” Ebling Library, Wisconsin)	Measures of value
King D. Methods to Assess the Use, Value, Cost, and ROI	Academic Report. The “LibValue” Project A number of projects	Funded Research Report. Detailed breakdown of cost factors and rationale	Aimed at academic libraries, useful concrete measures which could translate to clinical settings

<p>of all Academic Library Services. 2010.</p>	<p>performed at several universities with the Association of Research Libraries (ARL) to identify the values of:</p> <ul style="list-style-type: none"> - Scholarly reading - Comprehensive value of academic library journal collections - Teaching & learning - Digital special collections - E-Books study - The ARL 	<p>behind them. From page 73 gives detailed methods of calculating service ROI. Level VII</p>	<p>(e.g. p88: "Use of a Librarian to Conduct Reference Services by Faculty and Staff"). Contingent Valuation Method used. Measured economic ROI but not environmental or social aspects. Difficulty replicating most examples in hospital/health care setting.</p>
<p>Jemison K, Poletti E, Schneider J, Clark N, Stone R. Measuring Return on Investment in VA Libraries. Journal of Hospital Librarianship. 2009;9 (4):379-390.</p>	<p>Outline of tools developed by workgroup to establish ROI in Veterans Affairs hospital libraries, including "ROI Analysis" tool, a "Library Scorecard", and a "Management Support Report".</p>	<p>Workgroup report. Provided examples, results, instruments & validation. Ruled out "soft data". External consultation (Centre for Performance & ROI) in developing the instrument. Level VII</p>	<p>Splits ROI into several distinct aspects – Business Impact (clinician time saved, etc.), Demonstrating Value (cost savings from ILL versus external/commercial service costs, etc.), Library use versus Output (usage figures etc.) and Intangible Benefits (influence on decision making, impact on patient care etc.).</p>
<p>Strouse R. Demonstrating value and return on investment: The ongoing imperative. Information Outlook 7(3) 14-19. 2003.</p>	<p>An overview of value measurement tools in US Corporate, academic and government libraries.</p>	<p>Literature Review. Includes aggregated data from end-user studies in the Outsell Inc. "Normative Database". Data derived from questionnaire (subjective) data. Level VII</p>	<p>ROI based on \$ saved for time saved per library user, revenue generated, money saved by user, based on average salaries. Includes ROI questionnaire that could be relevant.</p>
<p>Bodycomb A, Del Baglivo M. Using an automated tool to calculate return on investment and cost benefit figures for resources: the Health Sciences and Human Services Library experience. J Med Libr Assoc. 2012;100(2):127-130.</p>	<p>Aim was to identify an automated instrument for calculating ROI and cost benefit ratios for the health sciences library's collection of books and journals.</p>	<p>Case Study. Comprehensive analysis of costs and resources such as staff time, purchase and maintenance costs etc.. Clear example of method and outcomes is given in paper. Level VI</p>	<p>Adaptation of the NNLM calculator. This article describes the process used to compile the statistics for the calculator. Measured librarian impact on cost-benefit ratio and ROI.</p>
<p>Chung H. Measuring the economic value of special libraries. Bottom Line: Mg Lib Finances.</p>	<p>Do the benefits of special libraries outweigh the cost incurred in providing the service? Set in a School Library</p>	<p>Case study on actual economic values of a special library was proven through a cost-benefit analysis.</p>	<p>Cost-Benefit analysis. Used the contingent valuation method to determine the user's value of the library against the alternative of no library services</p>

2007;20(1):30-44.		Level VI	provided.
Kelly B, Hamasu C, Jones B. Applying Return on Investment (ROI) in Libraries. Journal of Library Administration. 2012;52(8):656-671.	Literature Review of the type of tools used to measure ROI in different library settings, with emphasis on stakeholder perspectives.	Literature review. Focuses on objective measures (value of benefits vs. cost to produce) Level VI	Gives example of the adaptation by Kelly (2008) of the Massachusetts Library Association calculator for Health Sciences Libraries. Provides details about ROI calculation, but does not give quantitative evidence linking library value/financial impact.
Weightman A, Williamson J. The value and impact of information provided through library services for patient care: a systematic review. Health Information & Libraries Journal. 2005;22(1):4-25.	An updated systematic review of research studies looking at the value and impact of library services on health outcomes for patients and time saved by health professionals.	Systematic review of research studies. Large table of analysis for each study, but due to differences in analysis methods cannot be compared to each other Level V	No economic evaluation but features evidence of time savings and cost benefits. Varied but informative.
Banks D, Shi R, Timm D, Christopher K, Duggar D, Comegys M et al. Decreased hospital length of stay associated with presentation of cases at morning report with librarian support. J Med Libr Assoc. 2007;95(4):381-387.	In a working hospital, does case discussion at residents' morning report accompanied by a computerized literature search and librarian support, affect hospital charges, length of stay and 30-day readmission rate?	Case Control Study. Robust analysis of data indicates librarian support at Morning Report led to shorter length of stays. Costs and readmission were reduced but the study lacked statistical power to demonstrate any significance. Level IV	Three outcome measures: the length of hospital stay, total charges for hospitalization, and readmission rate within thirty days of initial discharge. The results in the librarian group were compared to a non-intervention group
Esparza J, Shi R, McLarty J, Comegys M, Banks D. The effect of a clinical medical librarian on in-patient care outcomes. J Med Libr Assoc. 2013;101(3):185-191.	To measure changes in patient outcomes when physicians were accompanied by a Clinical Medical Librarian (CML) on Rounds.	2-armed prospective interventional study. No randomization, limited to one single team rather than hospital wide. No case matching. No clarification of source of these costs. Level III	Outcomes of patients managed by team with embedded CML to answer questions posed by clinical team, compared with team with no CML.
McGowan J, Hogg W, Zhong J, Zhao X. A Cost-Consequences Analysis of a Primary Care Librarian Question and Answering Service. PLoS ONE.	Cost-Consequences Analysis using the RCT data for the "JIT Librarian Consultation Service" (McGowan 2008) to identify cost per question for a librarian consultation service in primary care, plus cost saving, and cost	Randomised Controlled Trial. Level III	Resource utilization versus cost saving and cost avoidance for a JIT service in a Primary Care Service. The results of the randomized controlled trial: Using a hand-held device (BlackBerry) in real time, physicians in the intervention group used a librarian-answering

2012;7(3):e33837.	avoidance. Providers who used the service saved time when questions were answered by a librarian and there was a reduction in the number of follow-up visits. Also estimated the potential economic benefit of JIT librarian consultation service to the health care system.		service versus searching for the answer themselves (Control group).
McGowan J, Hogg W, Campbell C, Rowan M. Just-in-Time Information Improved Decision-Making in Primary Care: A Randomized Controlled Trial. PLoS ONE. 2008;3(11):e3785.	Will using a librarian to respond to clinical questions allow primary care professionals to have more time in their day, thus potentially increasing patient access to care?	Randomised Controlled Trial. Economic evaluation is vague - Such services may reduce costs through decreasing the need for referrals, further tests, and other courses of action. The actual costs are not calculated, cost effectiveness is implied through time saved rather than explicitly measured and quantified. The collection of data on patient readmission etc. is useful. However no value is calculated so cost savings are implied rather than explicitly quantified Level III	Average time for librarians to respond to clinical question versus a clinician (reported) time to carry out the same search, and the value of the time saved for the clinician.

(Insert Table 1 here)

Bias

Of the 11 papers in the final selection, only 6 (Chung (2007), Banks (2007), Esparza (2013), McGowan (2008), McGowan (2012) and Strouse (2003)^{12, 13, 14, 15, 16, 17}) tested or applied the measurement tool they describe to their own setting. These papers were therefore further assessed for risk of bias in their application or reporting. carried out a study using the value measurement tool they are describing. The Cochrane Collaboration's "common classification scheme for bias" tool for assessing risk of bias in randomised trials¹⁸ is used below to assess the risk of bias in each of these studies.

Insert Table II here

Chung 2007 ①	+	?	?	+	?	See note below
Banks (2007) ②	+	+	-	+	+	
Bodycomb ③	+	+	+	+	+	See note below
Esparza (2013) ④	-	-	+	?	+	See note below

McGowan 2008 ⑤	+	+	?	+	+	
McGowan 2012 ⑥	+	+	?	+	+	See note below
Strouse 2003 ⑦	?	?	?	?	+	See note below
	Selection bias	Blinding of participants	Blinding of outcomes	Attrition bias	Reporting bias	Other bias

Key

+ Low risk of bias

- High risk of bias

? Unknown/unclear risk of bias

① No comparison data provided. Questionnaire did not provide option to choose “no benefit”. Costs derived from participant selection from list of broad pre-set values. Opportunity or likelihood of participants to provide a strong objective estimate is unclear.

③ Application of the NN/LM Cost Benefit and ROI automated tool in an academic setting. Focuses exclusively on ROI and Cost Benefit Analysis (CBA) of the library resource collection (see Appendix III)

④ Cases were not matched between intervention and control groups. There was extensive data collection and analysis.

⑥ This is a further analysis of the data collected through the RCT McGowan (2008)

⑦ Data is taken from a centralised “normative” database. Medians used rather than simple averages.

Excluded Papers

Papers that did not make it into the final 11 include Abels (2004)¹⁹ – although this article does not suggest a formula for demonstrating value to an organisation, it does suggest how to frame the library’s work in terms of the “*contributions of library and information services*”(CLIS) approach and its support of an organisation’s mission vision and values. Other concept papers identified include Poll (2003 & 2008)^{20,21}, Allen (2004)²², Stoloff (2006)²³, Dalton (2012)²⁴, Kelson (2008)²⁵, Henczel (2006)²⁶, Winning (2003)²⁷, Sidlofsky (2003)²⁸ and Murphy (2005)²⁹. These articles contained many good ideas for aspects of library operations that can be measured, including indicators that are of interest to contemporary managers. Papers by Hershey (2006)³⁰, Kaufman (2008)³¹, Aabo (2009)³², ALIA (2014)³³, Bryant (2006)³⁴ and Allen (2004)²² were assessed as informative but of variable quality, and lacking in adequate supporting evidence. Gardois (2011)³⁵, Medernach (2007)³⁶, Marshall (2013)⁷, Gray (2012)³⁷ and Sievert (2011)³⁸ provided evidence of the intangible benefits or the intrinsic value of clinical libraries but did not identify relevant values or costs of service delivery. Given the recent interest in “Value of Information” in reducing uncertainty, methods and benchmarks for evaluating ROI on in relation to these benefits are emerging.

Validity of value measures

While we as librarians may have clear views on the validity, applicability and robustness of the measurement tools highlighted in these papers, one of the major drivers behind this study was to identify how these tools would be perceived objectively by administrators, accountants and financial managers within the parent organisation. It is important to understand to what extent these metrics and measures of economic impact influence organisational decision making. We found few papers had identified tools for the measurement of the economic impact or financial contribution of clinical libraries to their parent organisation. Even fewer papers provided examples of instances where these tools had been applied.

In Jemison (2009)³⁹ the ROI tool was used in a management briefing to justify a proposal for increased staffing. The author reports that it was impossible to say the extent to which the tool contributed to the success of their proposal but describes seeking and receiving feedback seeking objective external input during the development of the tool from an external source which further strengthens may have strengthened its validity. In the McGowan (2008 & 2012)^{15, 16}

papers, there is no account of whether their findings were viewed as acceptable or justified by their stakeholders. Nor do Bodycomb (2012)⁴⁰, Chung (2007)¹², Esparza (2013)¹⁴, Banks (2007)¹³ indicate the outcome and/or acceptability of any of the tools used in their respective studies. Anecdotal evidence cited in Kelly (2012)⁴¹ suggests that the NN/LM (National Network of Libraries of Medicine) Valuing Library Services adapted calculator has attained some acceptability when presented to management.

A more detailed analysis of each of the measurement tools is provided in Table 1.

Methods of measuring financial impact.

We wanted to establish whether the measures of value identified in this review had equivalents in the clinical literature.

Return on Investment (ROI) was the most frequently used method, present in the literature. In these papers, with ROI is frequently defined by the concept of the value of time saved through using a librarian rather than a higher-waged clinician to carry out a search, combined with the opportunity cost benefit to the clinician (McGowan(2008) and (2012), Strouse (2003)^{15, 16, 17}). This measure has considerable precedent in a healthcare setting. In Lee (2012)⁴², the author states: *“Using physician time in the most efficient way will be a key element for decreasing health care costs at the aggregate level. Therefore, expressing radiology’s contribution in terms of downstream physician time saved is a metric that can be easily understood by all stakeholders. In a conceptual framework centered on value, the specialty of radiology must focus more on its most important product, actionable information, rather than on imaging technologies themselves.”* Both Forte (2011)⁴³ and Tibesku (2013)⁴⁴ identified cost benefits through time saved in the endoscopy unit and in the Operating Room respectively, when carrying out feasibility analyses on changes of practice.

While the underlying concept is the same, it is important to note how “time saved” was evaluated in the clinical instances cited above (Lee (2012), Forte (2011), Tibesku (2013))^{42, 43, 44} and compare this with the methods used in the Library studies. In Lee (2012)⁴², an internal costing exercise by a radiology service identified both physician and patient time saved through using “time-driven activity-based costing (TDABC)”; cost of all resources used were measured against outcomes from “actionable information” generated by radiology, including reduced referrals to specialists. Both Forte and Tibesku used “observed time” which is feasible when evaluating consistent recurring actions forming part of an established process. This method does not translate easily to measuring time spent searching the literature for instance, as this will vary according to the complexity of the query and, depending on the clinician’s schedule, may be segmented by time and place. Strouse (2003)¹⁷ used “reported time” which introduces an element of uncertainty; however McGowan (2008) and (2012)^{15, 16} used real time comparative data from their RCT to estimate time saved.

Cost avoidance as an outcome of librarian searching and disseminating information is an important measure for librarians in clinical settings, including shortened length of stay and reduced hospital charges (Banks)¹³, fewer tests ordered and fewer specialist referrals (McGowan)^{15, 16}. Identifying an equivalent measure in a non-library setting produced some interesting comparisons. Clinical equivalents include Ray (2015)⁴⁵ who highlights opportunity costs to patients of an ambulatory visit scheme through avoidance of travel costs and loss of wages., while Lo Sasso (2006)⁴⁶ and Van Dongen (2013)⁴⁷ measure the effects of workplace depression and activity coaching on reduced absenteeism, increased productivity and reduced levels of fatigue. Self-reported outcomes, as used by Lo Sasso, are not a particularly robust form of measurement but are sometimes the only feasible method.

Contingent Valuation Chung¹²(2007) used this method to measure the economic value of the library and we see similar measures throughout the scientific literature in particular in “Value of Information” (VoI) studies which compare costs of acquiring information with the potential costs of working with “imperfect” information (Naunheim (2015), Wang (2015), Nimdet (2015), Eeren (2015))^{48, 49, 50, 51}. The formula in the VoI studies is complex but by necessity also to be hand by its nature is based on probability. Contingent valuation is an established economic method for eliciting a financial valuation of a non-market good.

Costs Benefit Analysis. Strouse¹⁷, Kelly⁴¹ and Jemison³⁹ recommend a combination of qualitative and quantitative data when assimilating ROI data. For example the Jemison worksheet combines costs of service and impact as reported by clinicians. *“Despite the lack of attached monetary value, (intangible benefits) are the heart and soul of our service.”*

(Jemison). Examples of these are to be found in Jemison worksheet C: *“influenced advice to patient and family”*; *“altered the mode of treatment”* etc. This can be compared to Kotronoulas (2014)⁵² where we see evidence of cost-benefit analyses being carried out on Patient Reported Outcome Measures (PROMS). This data which is primarily subjective and anecdotal is being evaluated with reference to patient outcomes (POs), processes of care (PoCs), and/or health service outcomes (HSOs) *“In some studies, PROMs are associated with improved symptom control, increased supportive care measures, and patient satisfaction.”*. A costs benefit analysis is useful as it identifies and incorporates social values into the economic evaluation of services. However there is difficulty in ascertaining an explicit financial value to these aspects of the service, and their value is highly subjective and dependent on personal viewpoint. This can reduce the validity of cost benefits analyses.

Cost effectiveness Analysis and Cost Utility Analysis: Two other measures were identified in this review: cost effectiveness of resources supplied through the library – this has particular relevance to Academic Health Centres and in University Health Libraries (King (2010), Bodycomb)^{40, 53}. Again, this form of measure is based on established accountancy practices. Both Cost-Utility Analysis (CUA) and Cost-Effectiveness Analysis (CEA) are recommended analytical methods for Health Economic Evaluation studies (Riedel 2013).

Finally, another measure identified in the process is the impact of the library on the (grant) research revenue generated for the organization (Kelly, Kaufman 2008)^{41, 55}. This is inherently a classic economic evaluation tool.

Discussion

One systematic review (Weightman 2005)⁶ which was included in the final set of results did not include a measurement tool. The Weightman review analysed the areas of specific interest to this review and although there was a lack of homogeneity in the reviewed papers, it contains a very useful body of information which is worth reading prior to undertaking an economic evaluation of a clinical library service.

At the outset of this review, we noted the concerns of Abels (2012)⁵⁶ who, when developing their her taxonomy of library contributions in healthcare settings who, stated that a value item had to demonstrate *“.....whether it could be measured or had a measurable surrogate”*. Jemison (2009)³⁹ also notes the difficulty of assigning causality to the library’s *“most central functions”* and suggests using counter statistics and *“assigning problematic values to them.”* Jemison reminds us of the importance of maintaining fiscal credibility and validating any claims on value or cost avoidance: *“for example, if you assume a “knowledge” benefit to which you have attached a generalized benefit per transaction, management may well see the fallacy of the generalization as well as query your rationale for the value you have assigned”*. Nonetheless, innovative means of valuing services and activities are emerging in other areas of healthcare, as illustrated by the “Facilitator Model” for conference attendance in Nebrig (2015)⁵⁷, although *“We found, however, no research literature measuring an organization’s financial return on investment from professional conference attendance by direct care nurses.”*

“Value” according to “ISO 16439: Information and documentation – methods and procedures for assessing the impact of libraries” (2014)⁵⁸ is defined as *“importance that stakeholders (funding institutions, politicians, the public, users, staff) attach to libraries and which is related to the perception of actual or potential benefit”* adding a note *“Monetary value can be included”*. The aim of this study as previously mentioned is to explore only that final element: monetary value or financial benefit.

Undertaking a cost-based evaluation of a service is both labour-intensive and time consuming and it is important from the outset to have clear goals for the evaluation and a clear idea of stakeholders. Kelly⁴¹ (2012) states *“One must consider what needs to be shown or proved, why, and to whom when determining if ROI is the best or most appropriate tool for the job”*. Cherniack (2010)⁵⁹, using a preventive health model, illustrates the differing ROI perspective of the different stakeholders.

We have also seen examples of specific tools being developed for use in measuring and validating a specific aspect of the existing service or to justify a new service (Banks (2007), Esparza (2013))^{13, 14}.

Conclusion & and recommendations

This review identified a small number of 7 different methods of measuring value in a clinical library. measurement tools and calculators. These provide a range of useful methods and ideas that can be adapted to different settings, countries and audiences. However, there is a limited evidence to establish the validity of these tools and methods. Specifically there is a lack of evidence that the results from identified through implementing these tools are viewed positively by parent organisations and have any subsequent impact on the library service.

The importance of including intangible benefits and intrinsic value when measuring the library service output has been stressed. Einstein's quote "Not everything that counts can be counted, and not everything that can be counted counts" is very apt in a Library setting.

Nevertheless, a standardised approach to measuring the financial impact of clinical libraries is highly desirable. The NNLM "valuing library services calculator" (see appendix 3) has been adapted for use in a number of studies and may provide the necessary basis for a value-based standard but this review found a lack of robust research and little consensus on the best approach or method to achieve this. Prior to completion of this paper, we carried out a thorough search for relevant papers published in the interval since our original searches. This produced only one extra paper referencing the UK NHS Library Quality Assurance Framework (LQAF) tool. (NHS, 2014)⁶⁰ There is a danger that different Countries will each develop their own tool which will make it difficult to establish universal benchmarks and standards.

Further research in this topic is recommended and there is a need for better reporting of feedback received from parent organisations on the value based tools used by clinical libraries.

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