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# **Evaluation of outreach services for primary care and mental health; assessing the impact**

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## **Abstract**

### **Objectives**

This paper reports an evaluation, carried out for London Health Libraries, of the impact of outreach services to primary care and mental health workers in thirteen different settings. The main aims of the project were to identify the impact being made by the service, and to produce best practice guidelines for outreach services in this kind of 'difficult' community setting.

### **Methods**

Methods used were: analysis of documents (all 13 services); analysis of any evaluation already performed by or for the service (all 13 services); interviews with outreach librarians (11 services); questionnaire survey of a representative sample of users (8 services, with 66 returned questionnaires, 35% response rate). The services evaluated were very diverse, in terms of setting, structure, functions and activities, and extent and nature of self-evaluation and reporting. The evaluation was therefore largely qualitative, in order to deal with the lack of a consistent 'template' for analysis. Emphasis was placed on trying to identify critical incidents, where it could be shown unambiguously that the outreach services made a difference to practice,

Study limitations included the difficulty of summarising and comparing very different situations and diverse services, difficulty in identifying critical incidents, and an inability to study 'non-users'.

### **Findings**

Service recipients felt better informed, more up-to-date, more aware of resources, more confident and supported in their work, and saved time. Services contributed to a richer information environment. Direct impacts, demonstrably improved patient care, cost savings etc., were more difficult to establish.

### **Conclusions**

The study identified the main areas of impact, and the main factors which affected this. Recommendations for good practice in such outreach services are made. Lessons of this evaluation for impact studies in general are presented, in particular the difficulty of assessing 'direct' impacts.

### **Keywords**

Library Services; Information Services; Libraries, Medical; Evaluation Studies; Primary Health Care; Mental Health Services

## **Key Messages**

### **Policy**

- outreach services for primary care and mental health need a consistent framework for synergistic services and functions
- outreach services for primary care and mental health need standard methods for self-evaluation and external evaluation
- evaluation of 'direct' impact of information services, in these settings, is problematic
- justification and improvement of outreach services can be based on 'indirect' impact assessment

### **Practice**

- outreach services can be shown to provide a positive impact in primary care and mental health settings
- service impact can be evaluated locally, though indirect impacts are more readily assessed than direct impacts

## Introduction, and aims of the study

This study aimed to evaluate the impact of outreach services, provided by London Health Libraries (LHL), to primary care and to mental health. It further aimed to assess the reasons for the impact, or lack of it, in the various outreach services, and to make recommendations for good practice. It was hoped that the study would also add to evidence available as to the best way to evaluate of impact of library/information services, in healthcare settings and more generally. The research questions were therefore: to what extent can impact of these outreach services be assessed; what is this impact; and what recommendations can be made for good practice.

'Outreach services' are here understood to be library / information services provided pro-actively to healthcare workers in their working environment, by contrast with traditional on-demand services provided in library settings.

A full report of the study methods and initial findings is available [1], and a brief account of the study, focusing on the implications for impact studies has been presented at an international meeting [2]. This paper summarises the methodology and main findings, and draws out lessons for the assessment of the impact of healthcare information provision.

The study commenced in April 2005, with main data collection being carried out in late 2005 and early 2006. Analysis and discussions with sponsors and service providers, and dissemination, led to a conclusion of the project in April 2007.

The assessment of impact of library/information services on the business of the organisations which they serve, which in the case of a health service will be improved outcomes for patients, better promotion of good health, and cost-saving, is a topic which is generally accepted as vital, but difficult to achieve. Many methods and techniques have been adopted in an attempt to evaluate the impact of library/information services in general; none of these, however, has been generally accepted as providing a reliable measure of impact. For recent examples, not restricted to the health sector, see references 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 and 13. For analysis of literature describing impact studies in the specific area of value of information provided through healthcare library services as it impacts patient care, see references 14, 15, 16, 17 and 18. These studies suggest that, while direct impact is difficult to establish unequivocally, there is an increasing body of evidence to suggest that information provided by library services can influence patient care outcomes, and that assessment of impact at a local level is possible, particularly through use of critical incident techniques.

In general, these have concluded that impact can best be assessed by 'secondary' or 'indirect' factors, such as confidence of clinical staff, perceived time saving, and greater awareness of information sources; where quantitative impacts such as length of stay in hospital, and direct costs have been claimed, these have not always been convincing (see, for example, reference 19), while sets of 'indirect' measures have been proposed [20, 21]. The ideal would be a method which could establish clearly, ideally quantitatively, the direct impact of the work of a library / information service to the outcomes of their environment, but this is rarely possible largely because of the difficulty of establishing what would have happened without the service's input; see reference 2 for further discussion. It is of course arguable that service posts largely occupied with training users to make good use of information resources, as were some of those evaluated here, might not seek to make direct impacts on patient care, so that the aims of the study might be unrealistically high for these settings.

Quantitative measurement of aspects such as items borrowed, the number of registered users, database usage, inter-library loans and training sessions given is readily undertaken, and indeed much literature exists to show that these indicators all increase following the establishment of posts such as clinical librarian, outreach librarian or other healthcare specific LIS services; see for example, references 22 and 23.

Qualitative data, usually from questionnaires and feedback forms, can show support for, and appreciation of library services [24]. Furthermore, this sort of data collection can be indicative

of why users are visiting the service, and what sort of 'use' is made of information provided or training received [25, 26]. It is also possible to establish basic cost-benefit information from questionnaires, by asking the healthcare worker how much of their time has been saved by the information being obtained by the LIS professional, and thereby how much monetary value can be attributed to the service [27, 28].

On this basis, the present study was planned as an attempt to identify 'direct' impact where possible, supported by measures of 'indirect' impact.

## Study methods, and their limitations

The study was carried out within thirteen outreach services in the London area, providing information in either primary care or mental health settings (for a general perspective on outreach services in health libraries, see references 29 and 30, and for library/information services in the areas of this study see references 31, 32, and 33. These are areas of healthcare where proactive information provision, and the evaluation of its effectiveness, has been limited, by comparison, for example, with clinical librarian services in secondary care settings; Lacey Bryant and Gray [28] and Parker and Urquhart [34] provide two of the few such examples. The services were very diverse in nature, providing a particular challenge for the evaluation of their impact in the round. In particular, while some services were based on permanent posts, the majority were limited life projects, typically of two or three years [1]. Their services typically included user training, on-demand searching, document supply, and promotion of services and resources.

Each service was provided by a different healthcare Trust (the administrative units managing healthcare locally within the UK National Health Service). London Health Libraries, which commissioned this study, was at this time the body coordinating the activities of all health library / information services in the London area.

In this study, the evaluation of the thirteen services was based on a three stage process:

- analysis of job descriptions, background material, reports, evaluation forms, and any other materials provided
- a semi-structured interview (1-2 hours in length) with the outreach librarian, followed by incorporation of their feedback on the draft interview description
- a questionnaire survey of a representative sample of users

This combination of well-understood methods is that which is regarded as generally appropriate for this sort of evaluation [14, 35].

Of the thirteen services initially examined, two were able to participate only by submission of documents, because of pressure of work. The remaining eleven participated in the interviews, but three of these were unable, for various reasons (lack of time, users anonymous by intent), to circulate and return user questionnaires.

In summary, the services participated as follows:

|                                   |   |
|-----------------------------------|---|
| documents, interview, user survey | 8 |
| documents and interview only      | 3 |
| documents only                    | 2 |

The study was intended to be largely qualitative from the outset, due to the diversity of the services being analysed, in terms of setting, structure, functions and activities, self-evaluation and reporting. Materials provided were not always directly comparable, because of the lack of a consistent reporting template. Self-evaluation was largely based on reports of activities and expressed user satisfaction, rather than assessment of impact. Without a common framework for analysis, quantitative data collection and analysis was necessarily limited.

It was initially envisaged that non-users would also be surveyed, as this is an important group to understand [36]. However, this idea was abandoned, as there was no way to identify non-users. Indeed, most services did not even have a definitive listing of their potential users, as comprehensive staff lists, often spanning more than one Trust or service, were either non-existent, or withheld due to data protection concerns. Furthermore, the main likely reasons for non-use, generally cited as lack of time, and lack of awareness of the service, would also militate against survey participation.

The user survey was distributed by the service provider in the way that they thought best to a representative sample of users, with individuals chosen on pragmatic grounds within the main groups served, and the introductory wording adapted by the service provider for clarity and local relevance, when necessary. The survey was anonymous, but users were invited to give their names in case of follow-up questions: the majority did so. 189 questionnaires were

distributed, and 66 (35%) were returned. 43 (65%) were from primary care and 23 (25%) from mental health, with a good distribution of user speciality, and roles distributed as follows:

|                   |    |       |
|-------------------|----|-------|
| doctor            | 19 | (29%) |
| nurse             | 25 | (38%) |
| allied profession | 12 | (18%) |
| other             | 10 | (15%) |

Because the survey was distributed by the service provider, and in some cases returned via them, there is a likelihood of some 'desirability' bias [14]. This method is nonetheless justifiable, as being the best way to get reasonable response from a 'difficult to reach' population, and also avoiding confusion in the minds of users as to which library services were being surveyed. With this in mind, the response rate, though arguably somewhat disappointing, seems adequate to provide valid indications of impact.

Full details of the questionnaire schedule for service users are given in the project report (Robinson and Bawden 2006). The main questions posed, apart from those requesting background information, were: how much do you use the service, and for what purposes ?; what are the main benefits you get from it ?; has it made any direct impact on your practice or behaviour ? or that of your colleagues ? How ?; can you give specific examples or incidents ?; how could it be improved ?; how would you fill the gap if this outreach service were withdrawn ? Responders were invited to add comments freely.

The interviews were carried out by the project workers, who both had healthcare backgrounds and experience in user interviewing. Full co-operation was given in the interview process, and in most cases a very full set of background material was provided; for details of the full set of materials provided, see Robinson and Bawden [1]. These materials, however, were not always directly comparable, because of the lack of a consistent reporting template. They, and the interview results, were analysed in terms of the themes discussed later.

It became clear that there was, in these healthcare environments, a particular difficulty in assessing the 'next stage' of impact, beyond the evaluation of a training course, or mediated search: information on how practice changed, or what happened in individual instances of patient care. There are, in the setting of outreach to primary care, with its dispersed, mobile and fragmented user community. no 'regular users', and hence no 'natural contact' for getting this follow-up information, as there would be in the 'clinical librarian' setting [37, 38]. There is little chance for informal meetings with individual staff, and no regular forum to meet a wider group. Specific examples of impact are therefore hard to find, even in an informal or anecdotal way. It may be that, in the future, a changing context of primary will alter these factors, so that library / information staff may be able to contribute more directly to outcomes, and to assess their impact; but the current environment limits both the impact of library / information services, and its assessment.

Nonetheless, the methods used proved sufficiently discriminating to provide a consistent and reliable indication of the impact of these services.

## Main findings

The results of this study can be summarised under three headings: the overall impact of the outreach services; particular impacts, identified in both specific and general terms; and the use (and non-use) of the services by groups of potential users.

Although, as noted above, the services did not follow a common template of activities, some commonality is evident. All but one of the services had training as an important function, some as the main or virtually only function, while all offered a different mix of additional services. It proved difficult to obtain comparable quantitative information on training provided by the services, because of their different remits, and different data collection and reporting practices, and therefore the evaluation is largely qualitative. Detailed quantitative information is given by Robinson and Bawden [1].

### Overall impact

The services are well-received (so that virtually no 'negative' quotes could be identified, apart from a number stating that they would have no time to follow or make use of what they had learned from training or promotion of resources), and seem to be having an identifiable impact on some aspects of practice:

*'I have used [the outreach service] quite extensively .. it has been quite invaluable to me'* (community nurse)

*'the service is of huge benefit'* (practice nurse)

*'it makes my life easier'* (podiatrist)

and if the service were withdrawn:

*'I don't know where I would go'* (GP registrar)

*'I don't think the gap could be filled'* (clinical psychologist)

*'it would reduce efficiency in a very real way'* (speech and language therapist)

*'this would be a very great disappointment, and I am not sure how it could be replaced'* (GP)

Training courses, in general, are met with approval and satisfaction, as judged from the user questionnaires; those named by participants as particularly useful are KA24 (the main set of integrated electronic healthcare information resources available through these services) (5), one-to-one specific training (3) and advanced searching (1). Some trainees raised doubts as to whether they will have sufficient time (10), and convenient access to resources (6), to put what they have learned into practice.

Areas of impact, roughly in order of significance across the services, may be summarised, and these represent the first of the study's main findings. They are:

- greater awareness of information resources among the groups served, and greater readiness to use them, as a result of promotion and advice
- improved information skills, and confidence in choosing and using information resources, among the groups served, as a result of training received
- users are kept up-to-date with resources and techniques
- staff feel more confident and more supported in their practice, and in their education and training, with benefits for job satisfaction and career development
- a more thoughtful and evidence-based approach to practice is encouraged
- changed practice in patient care, or in support given to patients, as a result of advice and information provided by the services
- better decisions being made by staff at all levels and in all specialities (and also by patients about their own treatment, for the services which deal with them)

### **Specific and general impacts**

It has proved difficult to identify specific 'critical incidents'; examples where it could be shown unambiguously that the outreach services 'made a difference' to practice, where something was done which would not have been done without the service, although identification of such incidents can be a useful means of 'focusing' such a study [14]. Examples of specific impacts credited to the outreach services included:

- a GP asking for information identified by the service to be sent to a melanoma patient.
- A speech therapist using a outreach service to find literature to plan specific support measures for a child with speech difficulties, and sharing the literature with the parents
- *'I have personally used information from the literature to guide some critical clinical decisions regarding medication decisions in some of my patients'* (psychiatrist)
- Training meant that information on complementary therapies - in sources to which the Trust subscribed - was used to influence practice for the first time

This difficulty in identifying specific incidents is not unexpected, but is certainly an issue for the evaluation of the benefit of such services, and their justification.

Impact is more usually described - both by service providers and by their users - in more general terms, most commonly expressed as:

- confidence gained in information handling, and in using IT, (about one third of user responses mention this, explicitly or implicitly, and it is emphasised by several service providers), which may help career development, and job satisfaction, as staff feel more supported

*'I feel a lot more confident'* (community psychiatric nurse)

*"essentially, I can be confident that I'm doing the best that I can for my caseload ... if clients aren't progressing, then I can assure parents and carers that we are doing the "right" thing'* (speech and language therapist)

- time saved

*'time saving - saved time for patient and me'* (GP)

- better understanding of evidence, and where to find it

*'helps decisions to be made on a more systematic approach to the literature .. has helped to establish an evidence-based approach into the culture of my working style [including] my own practice and supervision of junior staff'* (consultant psychiatrist)

*'in the end, it has contributed to more evidence-based working'* (psychiatry registrar)

- adherence to good practice:

*'helps identify best practice, and gives evidence for management of patients in most effective way'* (GP)

*'reinforced the work I do, and how I do it'* [women's health counsellor]

*'it should stop me becoming limited or entrenched in the way I work with my clients'* (psychiatric nurse)

*'looking ... beyond the procedures and what others in the team have done'* (nurse)

The issue of building the confidence of the service users - which emerged from the interviews, from the user questionnaires, and from post-training evaluations, and other user surveys - is a general one across all the services studied. The outreach services seem to be fulfilling an important role in giving their users confidence that they are familiar with the kind of evidence that they need for their role, and with the sources from which it may be found. This, in turn instils a confidence that they are 'keeping up with things', and carrying out their practice in the most effective way, as well as feeling supported in their work and (where appropriate) their education and training. This is an important factor for job satisfaction and career development, as well as for effective and efficient patient care, and should not be underestimated.

Many service users, in all job functions, express a lack of awareness of the information and knowledge resources available to them - including the outreach service itself - but particularly evidence-based websites. This class of resources is particularly important, in reducing the increasing dependence on Google shown by users of the services; arguably one of the most important current contributions of outreach services.

### ***Use and non-use***

The services generally exhibited a good 'reach' in terms of attracting users across a wide range of speciality, location, role and seniority. There were a few exceptions, in which services appealed largely to a particular user group, either by circumstance or, in one case (a service aimed specifically at patients and carers), by design.

There was variation in the groups appearing as users or non-users. GPs, for example, were perceived as the most difficult to reach group by several services, but formed the majority of users for one service. The latter seems to be the result of a sustained effort to reach a particularly important and poorly represented group of users. Similarly, some services reported nurses as the largest group of users, while others counted them among the least common users. (The services provided to the nurses were essentially the same as those provided to all other users: largely training, promotion of resources and on-demand searching.)

As with other library/information services, a major motivation for the users of the outreach services was educational; about one half of user responses associated use of the services with their formal education or training. It may be that one valuable aspect of the work of these services, though perhaps not one of the main aims as originally envisaged, is supporting learners in community settings, when use of 'conventional' library/information services may not be feasible.

This process of identifying 'low use' groups, surveying them to try to find the reasons for this, and then concentrating promotion and/or targeted services onto them is a valuable and commendable approach, exemplified well in one service's approach to practice nurses. Inevitably, what can be done by any service in this respect will be limited by the time available to the outreach librarian, and their other commitments.

The reasons for limited use by some groups of potential users emerge clearly, and reasonably consistently, across the services studied, from questionnaire responses specifying lack of time, and from service providers' perceptions as expressed in the interviews. The main factors are:

- The workload of potential users means that it is difficult for them to make use of the service, even when they are aware of it, and convinced of its value.
- This is exacerbated by the major changes in working patterns being experienced by the potential user groups
- A perception by potential users that they are already overloaded with information, and do not need/cannot use any more

- A consequent belief that they can/must rely on the experience of themselves and colleagues to provide expertise and knowledge, and do not need evidence-based resources
- A lack of knowledge of the outreach service *per se*, or of its value to them. This was believed by several service providers to be main reason for lack of use.

### **Factors influencing impact**

The main factors influencing the impact of the outreach services are set out here, with fuller details available in Robinson and Bawden [1].

The nature of the service itself was clearly paramount, and it was noticeable that the outreach services providers had different job titles in virtually every case: sometimes emphasising the outreach role e.g. 'outreach and information skills librarian', 'information discovery programme co-ordinator'; sometimes focusing on one aspect, e.g. 'information skills trainer'; sometimes sub-ordinating it to general duties, e.g. 'assistant librarian (training)'; and sometimes not mentioning it at all, e.g. 'library manager'.

This highlights the lack of consistency in the perceived function and place of the outreach service. It was notable from the user survey, that some users seemed unable to distinguish the outreach service from more general library/information provision.

The issue of the 'service model' is one which was raised, implicitly or explicitly, with all the services examined. There does not seem to be any fully satisfactory model for outreach services to primary care/mental health, as opposed to the 'clinical librarian' model, which has proved effective in secondary care settings [18, 37, 38]. This model, which assumes the opportunity for assured regular contact with teams of users in a consistent setting, is inappropriate for the services studied, mainly, though not entirely, dealing with users in community settings. These mainly deal with widely dispersed and mobile user groups, with few, if any, regular users, and no natural forums or occasions for regular contact, such that a single outreach worker cannot hope to carry out the usual 'clinical librarian' functions.

It did seem that three aspects of such a 'model' were being utilised by those services which were most successful in attracting usage:

- a mix of outreach services, combined with other functions
- a focus on particular user groups judged significant in that setting
- partnerships with other service providers both internal (e.g. IT departments for PC support and IT training) and use of nationally licensed resources.

All the services carried out a variety of functions. The core function was training, carried out by all except one service (the exception being an advice service aimed at patients and carers). Mediated searching was also relatively common, and there was a wide variety of other functions carried out. There was little consistency in the mix of functions carried out for outreach, nor in the way that these were linked to other library/information activities. Sometimes the mix was dictated by local circumstances, or by funding constraints. This was most evident in a service funded by an award from the national lottery for a specific function, but at other times appears to have been somewhat arbitrary, and at the discretion of the service provider. Several service providers commented that they had no pattern or prototype of service development to follow, and had felt a lack of guidance as a result. Where a synergistic mix of services was offered, this seemed to result in higher visibility and impact.

The location of the service, both physically and organisationally, appeared to play a major part in the success, perceived and actual, of an outreach service. Feelings of professional, and perhaps even personal, isolation are likely to arise in an outreach service, operated by a single worker without close colleagues, primarily serving a dispersed community-based user group, where there are no regular users. Several of the services studied have benefited from location of this service within the library of a hospital, allowing good interactions between the outreach librarian and other information and knowledge staff, and allowing users of the outreach service to receive 'joined up' service, for example in obtaining documents.

There was no evidence of systemic problems in support for these outreach services, and support seems to have been generally adequate. Where they did occur, they were usually due to problems within Trusts or within the health service as a whole; problems in contacting user groups, office space, training rooms, IT facilities, etc.

Problems identified as significant in adversely affecting the impact of these outreach services included: the short term nature of some of the services' funding; time pressures on both

service providers and users; lack of priority given by user groups to information issues; and continuing changes in the working environment of users, due to reorganisations and restructuring.

Provision of outreach library/information services, particularly to the rather 'difficult' user groups (by virtue of their dispersed nature, time and work pressures, etc.) dealt with here, requires attributes of enthusiasm and empathy on the part of the outreach worker. It is therefore not surprising that, for those services which received extensive and positive user evaluations (in this study, and in the service's own evaluations), praise was given to these qualities of the librarian, and this may be a role for which choosing someone well suited to the task is of particular importance. Adequate healthcare and training background was important, particularly for those in short-term posts.

### **Recommendations for good practice**

Based on the results of this study, a series of recommendations for good practice in future provision of outreach services for primary care and mental health were presented to London Health Libraries, fed back to the services evaluated, and discussed extensively. They are summarised below, and form the second main finding of the study. While these recommendations are necessarily aimed at the setting in which the study was conducted (and based on a relatively small study with a limited response rate), the issues identified seem sufficiently general that they should be applicable to outreach services of this kind in any location.

#### ***Nature of service***

- promote a consistent set of job titles for outreach librarians
- promote a consistent framework of outreach functions
- promote a model for outreach service, based on good practice in current effective services
- promote a long-term funding structure for outreach services
- promote the location for future outreach services within a library service, providing a suitable physical and psychological location, and the possibility for backup
- promote explicit links between outreach services and IT departments
- promote good practice in administrative procedures, and in contacting potential users
- seek ways of positioning outreach services in the changing environment of the Knowledge and Skills Framework, and of CPD in the health service

#### ***Service providers***

- emphasise the personal qualities needed by outreach librarians in publicising and recruiting personal qualities
- consider ways of assisting newly appointed outreach librarians to make up for any lacks in their healthcare background
- consider ways of supporting outreach librarians' training background, including train-the-trainer courses
- ensure that training on relevant resources for outreach librarians comes at the right time
- promote a support network for outreach librarians, perhaps based on clinical librarian networks
- advise outreach services to seek extra partners and mentors

#### ***Services provided***

- promote the idea that a synergistic mix of services is the best route for an outreach service
- encourage an emphasis on promotion and awareness as principal tasks for outreach services
- encourage services to participate in induction as a primary means of promotion
- promote good practice in training, focusing on one-to-one, subject group, and workgroup training, and encourage innovative training ideas
- encourage services to be explicit about the extent of, and rationale for, their provision of mediated searching
- encourage services to focus on 'low use' groups, surveying them to try to find the reasons for this, and then concentrating promotion and/or targeted services onto them

#### ***Evaluating and reporting impact***

- promote a standard format of self-evaluation, and for reporting, to help comparability and identification of good practice
- recommend that any evaluations of services, apart from self-evaluation, should also follow a consistent form, for comparability
- promote a method of longer-term user evaluation, to be recommended to all services, to identify the impact of training and information provision after some months

The recommendations around the need for a consistent framework for services and functions, for long-term funding, and for standard methods for self-evaluation and external evaluation, may be seen as providing a strategy for development for such outreach provision.

## **Implications for impact studies**

The results of this study provided valuable and usable evidence as to the value of these particular outreach services, and as to how the operation of these services may be improved in the future.

However, the evidence was largely restricted to 'indirect' impacts on patient care, and on the efficient provision of healthcare. Recipients of the services felt that they were better informed, more up-to-date, more aware of 'good' information resources, more confident and supported in their professional abilities, had their time saved, etc. The services could be shown to be contributing to a richer information environment for their users. 'Direct' impacts, in the form of demonstrably improved patient care, cost savings etc., were more difficult to establish. In this study, this can be partly attributed to the difficulty of obtaining comparable quantitative data for very diverse services, and partly to the difficulty of following up critical incidents in the environments studied here.

The literature suggests, however, that the difficulty of demonstrating direct impacts of information provision on healthcare is widespread, beyond the particularly tricky primary care and mental health settings. Ideally, in healthcare, we would like to show impact in terms of improved patient outcome, reduced costs and time saved. Whilst it seems entirely reasonable that library services provide a positive contribution to healthcare, attributing the above impact factors solely and directly to LIS services is problematic [7].

It may be that assessment of indirect impacts is the most that can routinely be hoped for, backed up by other forms of evaluation of the value of information systems and services. These, if reliable and consistent, should be a good basis for justification and improvement of services.

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