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Barriers to the up-take of telemedicine in Australia – a view from providers

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ABSTRACT

Introduction: The continued poorer health status of rural and remote Australians when compared with their urban counterparts is cause for concern. The use of advanced technology to improve access to health care has the potential to assist in addressing this problem. Telemedicine is one example of such technology which has advanced rapidly in its capacity to increase access to healthcare services or provide previously unavailable services. The important anticipated benefits of greater access to healthcare services are improved health outcomes and more cost-effective delivery.

Methods: A national study was conducted to investigate the current perceived use and usefulness of telemedicine from the perspective of users and providers, and their views on how telemedicine could be expanded in Australia. In one component of this national study, the expert opinion of experienced providers of telemedicine services was elicited using a Grounded Theory approach and using semi-structured interviews which were analysed thematically. This article reports on the barriers to the up-take of telemedicine identified by this sub-sample.

Results: The primary barriers identified were: funding; time; infrastructure; equipment; skills; and preference for the traditional approach. While funding is a well-known barrier to the up-take of telemedicine, the extra time required for a telemedicine consultation has particular implications for the workload of rural doctors. The comparatively poor internet access available in rural Australia combines with difficulties accessing some items such as a computer, to make equipment an issue. Even though lack of equipment skills was identified as a barrier, the providers in this study reported that rural doctors are adept at using the telephone/teleconferencing and facsimile. A preference for a traditional approach can reflect a lack of interest in learning computer skills or difficulty acquiring this skill set.

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Conclusions: These results raise issues in the domains of policy, funding priorities, and education and training. This indicates an inter-related set of challenges that would require a targeted multifaceted approach to address. The results suggest that not using telemedicine is, in the current climate, a rational response – it is quicker, easier and more cost-effective not to use telemedicine.

Keywords: Australia, barriers, telemedicine, telehealth.

Introduction

The advantages of health service delivery using advanced technology have been promoted for decades[1]. The strengths of telemedicine are the capacity to provide access to healthcare services, previously unavailable, or to increase access[2]. In this article the term telemedicine describes the use of the telephone, facsimile, email and other web-based technologies for the provision of clinical and education services, at a distance.

The important anticipated benefits of greater access to healthcare services are improved health outcomes and more cost-effective service delivery. For these reasons telemedicine has long been considered a strategy which could contribute to addressing the poorer health of rural Australians and the inequitable provision of health services to rural and remote Australians[3]. Despite the many potential benefits of telemedicine, its under-use is consistently reported[4]. The barriers to up-take are well documented[5-7].

During the 1990s when telemedicine emerged on the Australian agenda, research with a national focus was conducted[3,6]. Since then limited work has been conducted on this scale. Therefore this article provides an update, from a national perspective, on barriers to the up-take of telemedicine, in Australia, by the providers of telemedicine services.

Methods

Ethical approval for the national study was received from the University of Queensland Behavioural and Social Sciences Ethical Review Committee. The study was conducted by the Rural Clinical School at the University of Queensland between April and June 2009.

Semi-structured interviews were conducted with a purposive sample of 10 established expert providers of telemedicine services, combining Australian and international experience. Their roles/occupations included: moderators, academics, medical specialists, internet technology specialists, educators and program developers. Most participants fulfilled more than one of these roles. The following medical disciplines were represented: dermatology; radiology; emergency medicine; toxicology; oncology; paediatrics; general practice. This sample consisted of: five medical practitioners who were employed to provide telemedicine services; two medical practitioners who did so in a voluntary capacity; two academics with a history of conducting research in this area; one internet specialist employed to set up systems for telemedicine; a trainer who conducted the training using telemedicine infrastructure; and a national body which intends using this technology to increase access to their area. The forms of telemedicine currently used by this sample were: email; direct file transfers; videoconferencing; and webinars. All interviewees had everyday contact with medical practitioners who are users or potential users of telemedicine. The interview guide consisted of questions asking the following:

- specialities participants had telemedicine experience with
- specialities participants thought rural doctors required access to
- specialities suited to telemedicine
- the role of Medical Specialist Outreach Assistance Program in increasing telemedicine services

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- what would assist users to increase their up-take of telemedicine
- the top five benefits and barriers to increasing access to telemedicine for specialist services
- their opinion on whether telemedicine services were a cost-effective approach to the provision of specialist services.

This article reports on questions that elicited their views of the barriers to increasing access to telemedicine for specialist services.

A combination of audio-recorded telephone and face-to-face interviews that took from 30 min to 1 hour, were conducted. An inductive analysis of the data was conducted, at three points during data collection – after the first two interviews, again after four more interviews, then when all interviews had been completed. This began with the identification of concepts in the data. Related concepts were combined into categories then linked categories were developed into themes consistent with a Grounded Theory approach[8]. The rationale for this approach was that despite an abundance of literature on telemedicine, the current perceptions of experts on its use and usefulness in Australia are not documented. Therefore an exploratory approach using semi-structured interviews and an iterative approach to analysis is an appropriate method. The first and second rounds of analysis were used to develop focusing questions within those in the guide, so the interviews that followed were shaped by the preceding analysis. The second round of analysis built on the first, and the third round of analysis built on the second. A literature review conducted prior to data collection informed the interpretation of the data, however new concepts did emerge from the data.

Results

The major themes arising from the analysis were: funding, time, equipment skills, infrastructure and a preference for the traditional approach. Each is discussed in turn and where there are links between themes, these are identified.

Funding and time

Participants mentioned funding most often as a barrier to the up-take of telemedicine. The inadequate funding for telemedicine is frequently mentioned both in Australia and internationally[9,10]. In this study participants referred primarily to the lack of funding for doctors, both GPs and specialists and their staff, to conduct telemedicine consultations. One participant indicated that there is a 'lack of financial incentives for staff doing it [telemedicine] at a remote site'. This was put differently by another participant: 'It needs to be cost-effective for the doctor'. 'The cost of access' was mentioned by a third participant, the 'costs for doctors' by another and the 'lack of a Medicare item number'; others simply said 'costs' and 'funding'. Currently telemedicine consultations are not remunerated through Medicare with the exception of some telepsychiatry services. In addition to the lack of remuneration, telemedicine is more costly for the practitioner because more tasks are involved, which leads to the second up-take barrier identified - time. For example it has been estimated that a teledermatology consultation can take up to 30 min[11] which contrasts sharply with the 15 min allowed for a traditional consultation. As one participant said, 'there is no easy way to get paid for the extra time'; and another - 'a phonecall can be quicker'. A second aspect of the time barrier is the time required to learn the technical aspects of a telemedicine consultation in addition to the consultation, described by one participant as 'time for the learning and time for the doing'. A well known issue for rural doctors was identified as a barrier – 'time … rural GPs are busy people'.

Equipment skills

This introduces the third up-take barrier identified – equipment skills. These are the skills necessary to use new equipment or learning how to use existing equipment in new ways.

Participants reported from their first-hand experience that there are both urban and rural doctors whose skills limited their ability to conduct a telemedicine consultation.

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Examples given by participants are: 'unable to attach a jpeg file to an email'; 'inability to use X-ray equipment well enough to provide an X-ray image with sufficient clarity for assessment'; 'don't know how to use a computer'. A more general comment is that 'some rural doctors have low IT skills and low confidence'. Training and on-going technical support are known to facilitate up-take[12].

Infrastructure

An up-take barrier related to equipment skills is infrastructure. This refers to the already well-documented poor internet access in rural and remote Australia[13] and the ability to access or acquire the necessary equipment. The poor internet access was described as the 'tyranny of distance' by one participant. A second participant indicated that 'some have nil broadband, just have satellite' and another the 'lack of broadband availability'. The unreliability of the internet was an issue identified for accident and emergency services, with the comment that 'the phone is unlikely to go down' and more generically, with the observation that people want to be 'confident it will work when they access it'. Related to this was the mention of bandwidth: 'need a guaranteed band width [for videoconferencing] which is available with a digital phone line but not with older ones'. More fundamental problems identified as barriers were 'not having a computer', 'not having camera' or 'not having software that matches the camera'. However the point was made strongly in some interviews that rural and remote doctors use the telephone and facsimile particularly well, with one comment being: 'rural doctors are very good with distance modalities, for example teleconference'. This includes the use of teleconferences for information, education and training.

Preference for the traditional approach

A barrier identified in the literature and also this study is that some doctors have a preference for the traditional approach. This is typically attributed to older GPs[14]. One participant indicated that while some people have a preference for the traditional approach which can be associated with life experience, others 'just don't want to learn the technology and may not have the learning style suited to telemedicine', yet others find these to be difficult skills to master. One participant indicated that some doctors 'lack confidence in the ability of telemedicine to deliver a competent service' and for this reason prefer the traditional approach. Similar to this, another participant said that 'some [doctors] are less comfortable and confident of making a realistic diagnosis in that setting'. A quote from one participant captured a significant barrier that is consistent with a preference for the traditional approach: 'it is easier to complete a Patient Transit Scheme application than to organise a video-conference'.

Discussion

The strength of this article is that the barriers to up-take are identified by a diverse group of providers with a breadth and depth of experience, and who have everyday contact with users and potential users of telemedicine. Limitations of the study include a small sample size and the inability to generalise these findings to the broader population because it is a non-random sample.

The barriers to the up-take of telemedicine today in Australia identified by providers in this study are typical of those already reported in the literature – funding, time, equipment skills, infrastructure and a preference for the traditional approach. Our findings suggest that several barriers are related and therefore may provide strategies on how they may be addressed and indications of the changes necessary to overcome them.

Time and funding have been identified as related barriers. Time is an issue particularly for rural and remote doctors because they have higher workloads and spend longer hours in clinical practice than their urban counterparts[15]. Therefore a set of additional tasks that requires more time would not be taken-up in the absence of some stronger incentive. The knowledge that better patient outcomes or increased cost-effectiveness may be an outcome of using telemedicine are

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potentially such incentives. However clinical effectiveness has been shown in only a small number of disciplines[16] and there is a lack of evidence of its cost-effectiveness[17]. So not only is there a lack of evidence that telemedicine is clinically or cost-effective, currently in Australia, but also a cost burden on the practitioner who chooses to extend the service to include telemedicine.

These time and funding barriers were significantly reduced in the public system by the provision of a coordinator and technology support for videoconferencing[10,18]. The ability of this model to reduce two significant barriers suggests its potential to increase up-take. However the barriers to expanding this model reflect current policy settings and related funding priorities in the provision of health care.

The second set of linked barriers is infrastructure and equipment skills. In 2006 almost half (46%) of those in major Australian cities had broadband access, but only just over a quarter (28%) of those in remote Australia did[13]. Poorer telecommunications access for rural Australia is a well-documented and an on-going issue that reflects policy and funding priorities that impact on all rural Australians[19].

The requirement for some technical knowledge to conduct a telemedicine consultation has long been considered a barrier to up-take[20] and conversely the provision of user-friendly technology considered an incentive for its up-take[5,21]. The comparatively high turnover of staff in rural and remote Australia[22] creates challenges for any training program, but this is a barrier that must to be addressed for up-take to increase.

Conclusions

What these results suggest is that not using telemedicine is, in the current climate, a rational response – it is quicker, easier and more cost-effective not to use telemedicine. Despite efforts to address the inequitable access to health services between rural and urban populations and the disparities in health status, key policy settings are maintaining barriers to up-take. Changes need to occur in health and rural policy and funding priorities to address the infrastructure and funding issues. Although the training needs of doctors already receive considerable attention the results of this study suggest that an increased focus on generic skills, such as computer skills, in addition to clinical skills would be a worthwhile investment.

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