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ORIGINAL RESEARCH

Survey of a videoconference community of professional development for rural and urban nurses

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ABSTRACT

Introduction: Videoconferencing technology has the potential to increase opportunities for healthcare professionals in rural and remote areas to access continuing professional development. This research used a quantitative approach to an evaluation of the effectiveness of videoconferencing technology in the development of a community of professional development.

Method: In 2008 a videoconference symposia was held across four sites in New South Wales, Australia. A survey developed and adapted from an existing model of online teaching and learning was completed by 55% ($n = 56$) of attendees.

Results: Survey findings revealed that successful aspects of the videoconference community included 'being welcoming and providing useful information', as partially or fully agreed by all respondents. Less successful aspects of the community included ease of use, with 44.6% ($n = 25$) either disagreeing or partially disagreeing that the videoconference was easy to use; reliability, with 33.9% ($n = 37$) either disagreeing or partially disagreeing that the community platform was reliable; and knowledge construction, with 69.1% ($n = 38$) identifying that they only took information and did not add ideas or content.

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Conclusion: The findings indicate that although the videoconference ran effectively with the experience of minor technical difficulties, respondents demonstrated more of a passive role than constructive in their development of new knowledge, despite the promotion of an interactive environment.

Key words: continuing professional development, learning communities, rural education, videoconferencing.

Introduction

Videoconferencing technology first appeared in the early 1980s when interactive video systems based on analogue television were used by clinicians to broadcast live telemedicine demonstrations, also known as telelectures, to remote lecture theatres[1-2]. As digital technology has rapidly developed, the use of videoconferencing in health care has become more affordable and readily accessible within both educational and clinical facilities[2].

The advantageous aspects of videoconferencing, such as enabling live interaction among geographically dispersed professionals[1,3], has highlighted the potential of such technology in the development of learning communities[4,5]. The purpose of this article was to present the findings from a survey of a videoconference community of professional development.

Videoconferencing and professional development

Healthcare professionals in rural and remote areas of Australia are faced with challenges in their access to professional development. Geographical isolation often influences the ability for healthcare professionals to interact with colleagues, and greatly reduces opportunities to participate in educational activities. It is believed that such factors are influential in attracting and retraining healthcare professionals in rural and remote areas[6].

Videoconferencing is therefore becoming a valued method for delivering continuing education opportunities to healthcare practitioners in rural and remote communities. Despite a paucity in the literature regarding the use of videoconferencing in healthcare professional development, the use of this technology is estimated to be increasing rapidly in conjunction with increased availability of and access to digital and audio technology. In Australia, for example, the use of videoconferencing to promote multidisciplinary interactive discussions between healthcare members of child development services in Queensland and Northern New South Wales (NSW) increased from two sessions per year in 2001 to 49 sessions in 2004[7].

Reported evaluations of the use of videoconferencing in the delivery of education and professional development for healthcare professionals in Australia have similarly illustrated high participant satisfaction and reduced professional isolation[6,8,9]. In Western Australia, a videoconferencing training initiative provided educational opportunities for those working with at-risk young people in rural areas[8]. Over 70% of the 18 participants gave overall high satisfaction ratings and consultation between agencies was enhanced with all participants agreeing that the training had influenced their initiative to seek consultative support. A Queensland survey of 166 clinicians (83% of attendees) who attended educational clinical forums provided by mobile videoconferencing units indicated very high satisfaction ratings for both content and transmission quality[9]. Eighty-eight percent of participants agreed that the sessions were relevant, 90% agreed that new content was provided, and 91% indicated that the video quality was acceptable. In addition, the mobility aspect of the videoconferencing units enabled sessions to be conducted in hospital wards, facilitating high attendance of clinicians. More recently, the evaluation of a series of national interactive videoconference seminars for the continuing professional development for

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rural psychiatrists throughout Australia highlighted the seminars' effect on reducing feelings of professional isolation[6]. Other positive feedback in this evaluation included 90% of respondents agreeing that the seminars permitted interaction between presenter and audience. The interactive component of videoconferencing was also rated highly in a Canadian study of 593 rural practitioners participating in professional development delivered by videoconferencing technology[10].

International studies evaluating the use of videoconferencing in the delivery of continuing education to healthcare professionals have, in addition to highlighting participant satisfaction, detailed less desirable aspects to the use of the technology. Allen et al[11] for example, conducted a study in Canada with the aim of evaluating the feasibility, acceptability, effectiveness, and cost of conducting practice-based continuing education using videoconferencing technology. While the videoconferencing format was well accepted by participants, the facilitator found that discussions were hindered by technical aspects such as poor audio and visual quality and audio lag. Layout and seating positions of participants were also identified as problematic, when in some sessions participants could not been seen by the facilitator. Technical problems resulted in delayed start times and the difficulty with connection at one site resulted in a missed module. The authors concluded that while videoconferencing may be efficacious under study conditions (because post-tests revealed evidence of knowledge gain), its effectiveness in practice is unknown. Similar technical hindrances have been highlighted in studies evaluating the use of videoconferencing in nursing education[12-14].

The advantageous aspects of videoconferencing technology delivery of education and professional development has influenced the use of technology in the development of learning communities. The concept of 'learning communities' is educational, and has been described as a 'powerful means of creating and sharing new knowledge'[5]. A learning community is a group of individuals with a common interest, whose learning needs are addressed in trusting collaborative relationships; group values and new knowledge are constructed through social interaction[5]. Using videoconferencing technology, a learning community has the potential to include professionals from both isolated and metropolitan areas, whose live interaction with colleagues is collaborative and educational. The aim of this article was to present the findings of a survey of a videoconference community in NSW, Australia in 2008.

Setting

The videoconferencing symposium aimed to build a learning community among leading academics, researchers and clinicians in a more accessible way than by attendance at traditional conferences. The symposium involved four sites in NSW. Three sites were within North Sydney Central Coast Area Health Service (NSCCAHS; at Macquarie Hospital, Wyong Hospital, and Gosford Hospital), and one site was within Greater Western Area Health Service (GWAHS; at Broken Hill Hospital).

The Macquarie Hospital had had a regular program of symposia for more than 3 years. In 2007/2008 discussions between NSCCAHS senior nursing staff and GWAHS (responsible for local and regional educational programs) identified an opportunity to share resources among sites. The difficulties health professionals in rural and remote communities experience in accessing continuing education has long been recognised[15], and attempts to video-conference the Macquarie symposia had met with limited success. It was recognised that improving linkages required more extensive preparation.

Further, Birden and Page[16] stated the importance of etiquette, teaching methods and technological testing and back-up to enable quality educational opportunities. To foster interactivity the continuing education was delivered from different sites with Macquarie Hospital and Broken Hill Hospital each delivering sections of the symposium. Technical preparation was led by NSCCAHS conferencing and media staff, identifying and liaising with counterparts at the other sites. Technological equipment defined the

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potential number of participating sites. Site facilitators were identified and briefed. Speakers were provided with guidelines on etiquette and teaching methods. Technical rehearsals were held prior to the event.

Method

All attendees were given a survey to complete and return to a site facilitator at the end of the day. The survey was based on Salmon's principals of building online communities. Salmon[17] began studying and practising the art of online teaching, also known as 'e-moderating', in the late 1980s when information and communication technology was primitive. Salmon was inspired to create a model for training and development from action research that investigated the use of computer mediated communication. Salmon's five-stage model, in addition to providing insight into what happens in online communities, forms a scaffolding for individual development using a constructivist approach[17].

The first stage relates to access and motivation. This involves the prerequisites for conference participation, individual access and participation ability. Stage 2 concerns online socialisation and involves the establishment of individual identities and interaction with others. Stage 3 is concerned with information exchange, where there is a focus on the giving and receiving of information. During the first three stages co-operation between participants is required where each person is supported. Stage 4 relates to knowledge construction. It is at this stage that interaction becomes more collaborative. This stage reflects communication among group members that is based on common understandings. The fifth and final stage relates to development. Participants reflect on the learning process and seek personal achievement of goals. Participants reach this stage when they are using a constructivist approach to learning.

In the present research, questions were categorised into four stages identified and adapted from Salmon's model[17]: (i) access and motivation; (ii) socialisation; (iii) information exchange; and (iv) knowledge construction. Salmon's fifth stage (development) was not included as it was considered beyond the scope of the symposium. Participants rated statements using a four-point Likert scale: disagree, partly disagree, partly agree and agree. The results were entered into Microsoft Excel to generate descriptive statistics and their visual representations.

Ethical considerations

Participant completion of the survey was deemed to imply consent, therefore ethical approval was not sought. Participation in the event was not contingent on willingness to complete the survey.

Results

Sample

The participating site with the largest attendance was Macquarie Hospital based at North Ryde in NSCCAHS. This site had a total of 46 individuals at the videoconference, and 27 completed a survey (response rate 58.7%). The site's respondents comprised 48.2% of all respondents. A 100% response rate was achieved at the remaining three sites. The site with the lowest number of respondents was Gosford Hospital with three attendees (5.4%). Wyong Hospital had 15 attendees (26.8%), and Broken Hill Hospital 11 attendees (19.6%). The total response rate was 55%.

Demographic data

Table 1 outlines respondents' position titles, gender and ages. The majority were nurses or pre-registration nursing students (67.9%, $n = 38$), of which 79% ($n = 44$) were female. The most frequent age range was 31-40 years ($n = 14$, 25%).

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Table 1: Demographic data of survey respondents

Demographic item	*N* (%)
Position title	
Registered nurse	11 (19.6)
Clinical nurse specialist	2 (3.6)
Clinical nurse consultant	4 (7.1)
Clinical nurse educator	3 (5.4)
Nurse manager	2 (3.6)
Student	16 (28.6)
Allied health	11 (19.6)
Mental health worker	2 (3.6)
Aboriginal health worker	1 (1.8)
Unspecified	4 (7.10)
Total	56 (100)
Gender	
Female	44 (79)
Male	12 (21)
Total	56 (100)
Age (years)	
<20	8 (14.3)
21–30	10 (17.9)
31–40	14 (25)
41–50	11 (19.6)
51–60	10 (17.9)
>60	3 (5.3)
Total	56 (100)

Survey results

The majority of respondents ($n = 34$, 60.7%) had attended less than 2 video presentations previously; 19.6% ($n = 11$) had attended 3-4 video presentations; 5.4% ($n = 3$) had attended 5-7 presentations; while 14.3% ($n = 8$) had attended more than 7 video presentations.

The survey was categorised into four stages; access and motivation, socialisation, information exchange, and knowledge construction. Survey questions and responses are detailed (Table 2).

Access and motivation

The majority of respondents agreed or partly agreed that the video conference community platform was reliable ($n = 37$, 66.1%), that the community was visually appealing ($n = 44$, 78.6%) and that the video conference community was convenient to access ($n = 40$, 71.4%). While the majority of respondents agreed or partly agreed that the video conference was easy to use ($n = 31$, 55.4%), a notable group disagreed or partly disagreed with this statement ($n = 25$, 44.6%). Almost all respondents ($n = 51$, 91%) agreed or partly agreed that joining the community was worthwhile.

Socialisation

Respondents reported that they agreed or partly agreed that the purpose of the videoconference community was clear ($n = 52$, 92.9%), that they were encouraged to participate ($n = 48$, 85.7%), and that the community was trustworthy ($n = 51$, 92.7%). The majority of respondents partly disagreed or disagreed that the community did not show a sincere interest in members ($n = 46$, 83.6%) and 100% of respondents ($n = 56$) agreed or partly agreed that the community was welcoming.

Information exchange

All 56 respondents agreed or partly agreed that the videoconference community provided useful information. The majority of respondents ($n = 54$, 96.4%) agreed or partly agreed that the videoconference community provided both timely and customised information. A large number of respondents ($n = 52$, 92.9%) agreed or partly agreed that their needs were met and that they felt able to contribute information thoughts and opinions ($n = 44$, 78.6%).

Knowledge construction

While 98.2% ($n = 54$) of the respondents agreed or partly agreed that the information was accurate and 76.4% ($n = 42$) agreed or partly agreed that they felt willing to communicate with other community members, a large number of respondents ($n = 38$, 69.1%) agreed or partly agreed that they only took information and did not add ideas or content. The majority of respondents ($n = 43$, 76.8%) agreed or partly agreed that they felt able to contribute to knowledge construction within the community and 84% ($n = 42$) agreed or partly agreed that the community valued their ideas.

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Table 2: Survey questions and responses

Survey question	Response							
	Disagree	Partly disagree	Partly agree	Agree	Max	Total replies	Major replies	Major replies %
The video conference community platform is reliable	3	16	30	7	30	56	Partly agree	53.57
The video conference community is convenient to access	2	14	24	16	24	56	Partly agree	42.86
The video conference is easy to use	3	22	24	7	24	56	Partly agree	42.86
The video conference community was visually appealing	–	12	32	12	32	56	Partly agree	57.14
I believe it is worthwhile joining the community	–	5	23	28	28	56	Agree	50
The purpose of the video conference community was clear	–	4	29	23	29	56	Partly agree	51.78
I felt encouraged to participate in the community	–	8	29	19	29	56	Partly agree	51.78
The community was welcoming	–	–	35	21	35	56	Partly agree	62.5
The community does not show a sincere interest in individual members	22	24	7	2	24	55	Partly disagree	43.64
The community is trustworthy	–	4	35	16	35	55	Partly agree	63.64
The video conference community provides useful information	–	–	25	31	31	56	Agree	55.36
The video conference community provides timely information	–	2	30	24	30	56	Partly agree	53.57
I felt able to contribute information, thoughts and opinions	1	11	26	18	26	56	Partly agree	46.43
The video conference communities information met my needs	–	4	30	22	30	56	Partly agree	53.57
The video conference community provided customised information	–	2	37	17	37	56	Partly agree	66.07
I felt able to contribute to knowledge construction within the community	2	11	30	13	30	56	Partly agree	53.57
The community valued my ideas	1	7	31	11	31	50	Partly agree	62
I only took information from the community I did not add ideas or content	7	10	21	17	21	55	Partly agree	38.18
The knowledge constructed was accurate	–	1	31	23	31	55	Partly agree	56.36
I felt willing to communicate with other community members	1	12	31	11	31	55	Partly agree	56.36

Discussion

Despite intensive preparation, on the actual day a range of technological difficulties occurred. These included a temporary loss of the visual link with Broken Hill and Wyong, which impacted on the timing of the symposium. Additionally, there were limitations to the ability for those on screen to see the full audience at the larger site (Macquarie Hospital). The large audience at this site also meant that questions from the audience had to be restated by the speaker or site convener in order for all community members to hear. These limitations have been experienced previously[11-14], and the present survey responses indicated a small number of participants were dissatisfied in relation to access issues.

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Other features impacted on the spontaneous interaction of the learning community. For instance, the site technological co-ordinator at Macquarie Hospital unexpectedly took on the role of directing question opportunities among sites. Anecdotally this is a not an uncommon convention in video-conferencing, but it curtails spontaneity and provides an additional barrier to direct interaction in the learning community.

The videoconference had a number of successes. All respondents were partially or fully in agreement that the videoconference community was welcoming and that useful information was provided, as has been experienced elsewhere[11].

The videoconference community aimed for the construction of new ideas through discussion stimulated by the presenters. However 69.1% of respondents indicated that they only consumed information and did not add new ideas or content, even though 76.8% reported feeling able to contribute to knowledge construction. This suggests that despite the attempt at creating an interactive approach to the development of knowledge, a significant proportion of respondents only passively received knowledge from the environment. This outcome is similar to the findings of Allen et al[11].

Limitations

The convenience nature of the sample and a response rate of 55% must be factored into the interpretation of survey results.

Conclusion

Videoconferencing technology has the potential to enable rural and remote healthcare professionals to participate in a community for professional development. Common limitations to the technology cited in the literature relate to technical problems and difficulty in achieving a fully interactive environment. While both these elements were identified in the present survey, the inevitable technical difficulties were minimised by thorough preparation, rehearsals and the presence of technicians. The videoconference was an overall success, with respondents indicating generally positive results across the four areas of the survey. However the attempted move towards knowledge construction was not successfully achieved, despite the encouragement of an interactive environment. Further research is required to fully understand this phenomenon; however, a more naturalistic approach to communication that avoids a mediator at each site repeating questions and channelling information may be productive.

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