An evaluation of the use of videoconferences in Belo Horizonte, Brazil

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Abstract

The Belo Horizonte City Health Department in Brazil uses videoconferences to stimulate interaction between specialists and health professionals and would like to further expand the use of this telehealth application. For that reason it was interested to conduct an evaluation of the videoconferences at the Health Department and to search for possible improvements in the technology and/or communication aspects. To evaluate the effectiveness of the videoconferences, a qualitative study was conducted based on a comparison between scientific literature about videoconferences and the videoconference process in practice. The data collection methods obtained information regarding the following subjects: success and failure factors and suggested improvements of various videoconference projects from the literature study, the videoconference process in practice as executed at the Health Department and the experiences of the users of the videoconferences in terms of participation, satisfaction with services and required changes. Satisfaction among users is high and the videoconferences are effective, because they influence the knowledge, attitudes and actions of the health professionals in a way as is intended by the lecturers at the Health Department. However, the videoconference process will need some adaptations or improvements to be able to use it in a more effective way.

Key words: *Telemedicine; Videoconference, Distance Education; Telehealth.*

Resumen

Evaluación del uso de videoconferencias para cursos de educación a distancia en Belo Horizonte, Brasil.

La Secretaría Municipal de la Salud de Belo Horizonte en Brasil utiliza videoconferencias para estimular la interacción entre especialistas profissionales de la salud, teniendo por objetivo ampliar el uso de esta aplicación de telesalud. Por esta razón se pensó que sería interesante realizar una evaluación de las videoconferencias hechas en la Secretaría Municipal de la Salud y buscar posibles mejorías en los aspectos relacionados con la tecnología y/o comunicación. Para evaluar la eficacia de las videoconferencias, fue realizado un estudio cualitativo basado en una comparación entre la literatura científica sobre videoconferencias y el proceso de videoconferencia en la práctica. Los métodos de recogida de datos obtuvieron información relacionada a los siguientes asuntos: factores de éxito y fracaso y mejorías sugeridas de varios proyectos de videoconferencia del estudio de la literatura, el proceso de videoconferencia en la práctica como ejecutado en la Secretaría Municipal de la Salud y las experiencias de los usuarios de las videoconferencias en términos de participación, satisfacción con los servicios y los cambios necesarios. Conclusiones: La satisfacción entre los usuarios es alta y las videoconferencias son eficaces porque influyen en el conocimiento, actitudes y acciones de los profesionales de la salud de la manera planeada por los conferenciantes de la Secretaría de la Salud. Sin embargo, el proceso de videoconferencia necesitará pasar por algunas adaptaciones o mejorías para que sea posible usarlo de manera más efectiva.

Palabras-clave: *Telemedicina; Videoconferencia; Educación a Distancia; Telesalud.*

Resumo

Avaliação do uso de videoconferências para cursos de educação a distância em Belo Horizonte, Brasil.

A Secretaria Municipal de Saúde de Belo Horizonte utiliza videoconferências para incentivar a interação entre os especialistas e os profissionais da saúde, querendo ampliar o uso desta aplicação de telessaúde. É por essa razão que foi interessante realizar uma avaliação das videoconferências realizadas na Secretaria Municipal de Saúde e procurar possíveis melhoras nos aspectos relacionados com a tecnologia e/ou comunicação. Para avaliar a eficácia das videoconferências, foi feito um estudo qualitativo baseado na comparação entre a literatura científica disponível sobre as videoconferências e o processo de videoconferências na prática. Os métodos de coleta de dados obtiveram informações em relação aos seguintes temas: fatores de sucesso e falha, melhorias sugeridas dos vários projetos de videoconferências a partir do estudo da literatura, o processo de videoconferência na prática como executado na Secretaria Municipal de Saúde, as experiências dos usuários das videoconferências em termos da participação, satisfação com os serviços e as mudanças necessárias. A satisfação entre os usuários é alta e as videoconferências são eficazes porque influenciam o conhecimento, as atitudes e as ações dos profissionais da saúde na forma prevista pelos palestrantes da Secretaria Municipal da Saúde. Entretanto, o processo de videoconferência precisa passar por algumas adaptações ou melhorias para poder ser usado de forma mais eficaz.

Palavras-chave: *Telemedicina; Videoconferência; Educação a Distância; Telessaúde.*

INTRODUCTION

Telehealth, at times also indicated as telemedicine, is a relatively recent and promising development, which is defined as the transfer of health care services at a distance using telecommunication technology.[1] The application of telehealth can have a great effect on health care, especially in countries such as Brazil, where large geographical distances, a poor infrastructure, poverty and limited qualified professionals lead to large variations in the quality of health services throughout the country's different regions.[2] Several years ago the Brazilian government started to invest in telehealth as a complementary tool to improve its health care services.[3] Several experiments between 2003 and 2006 led to an accumulation of experience and improved conditions for implementation of programs on a bigger scale.[4] The Belo Horizonte City Health Department (SMSA) has been organising videoconferences for distance education on health conditions and epidemic diseases for several years now, in cooperation with the Federal University of Minas Gerais (UFMG) and as a part of the municipal program 'BHTelehealth'. The videoconference sessions are an important component of the everyday work of a subdivision of the Health Department in particular, called the Management of Technology and Health Information (GTIS). The Health Department would like to encourage broader use of the videoconference technology and, by doing that, to advance the quality of public health care in general. Hence, it was interested to assess the application of the videoconferences, looking for possible improvements in the communication aspects or in the technology itself. Therefore, this study has evaluated the use of videoconferences by the Health Department, specifically the conferences in relation to dengue disease.

METHODS

To evaluate the effectiveness of the videoconferences, a qualitative study was conducted based on a comparison between scientific literature on videoconferences and the videoconference process in practice. In specific the videoconferences about dengue were evaluated, because this disease is considered a serious problem in the city of Belo Horizonte and videoconferences have proven the Health Department to be especially useful for the guidance of health professionals during outbreaks. The data collection process consisted of several elements: a literature study resulting in a description of a number of case studies, interviews with key persons and several representatives of participating groups of videoconferences at the health centres, a review of internal documentation, participant observations of various videoconferences on dengue, analysis of former evaluation forms filled in by participants of the dengue videoconferences and a workshop to identify the Strengths, Weaknesses, Opportunities, Threats (SWOT) and possible improvements as indicated by stakeholders. With these methods it was intended to obtain information regarding the following subjects: success and failure factors and suggested improvements of various videoconference projects from the literature study, the videoconference process in practice as executed at the Health Department and the experiences of the users of the videoconferences in terms of participation, satisfaction with services and required changes. Validity of the research was assured through the application of methodological triangulation, by using various methods and various sources to check for inconsistencies and to generate a conclusion.

RESULTS

From all success and failure factors and the suggested improvements of several videoconference projects mentioned in the literature, an extensive summary was provided. The common success factors among various cases from the literature were the progressive changes in the organisational culture of the institution and acceptance of permanent distance education as a means, the commitment and involvement of the management of a health centre, as well as the good notification and registration of the videoconference sessions beforehand. Failure factors were for the major part the problems that health professionals encountered when trying to attend the videoconference sessions. The recommended improvements from the several cases found in the literature were mainly suggesting a better organization of the participation of health professionals in the videoconferences, such as: a good policy to enable access to the system at scheduled dates and times, adequate timetables for the conferences as suggested by the participants and the implementation of digital libraries to allow major flexibility of attendance.

Process in practice

In addition, we had a closer look at the various aspects of the functioning of the videoconference process at the Health Department in practice with its main role players: the lecturers and the users/participants (the health professionals) at the health centres. The lecturer transfers knowledge via videoconference and responds to the questions of the participants, although it was noticed that at times not all questions are addressed. In addition, another actor that was observed was the technician, which role was to assure the technical aspects of the process. The major source of disturbance noted was the failing or unclearness of the audio, as well mentioned as source of disturbance by the interviewees, in addition to interruptions made and distraction due to an inappropriate videoconference room. Also, the influence of the structure, technology and culture of the Health Department on the process was described. Interviewees mentioned a certain hierarchy of lecturers and the influence of the Health Department on videoconference topics through its various committees. An interviewed videoconference technician uttered that the technology available at the Health Department urgently needs improvement and that the quality of transmission declines when a high number of health centres are connected. So far, the videoconferences are not fully integrated into the institutional culture, although the directive levels and health professionals are starting to believe in the use of this medium for educational purposes.

Participation

If we observed from the evaluation forms of the videoconferences on dengue from 2006 to 2010 (seven conferences in total) that, when excluding the category of 'other's, the Community Health Agents (CHA) - living in the community near the health centres and visiting the homes of families to observe the state of their health - participated most in the videoconferences about dengue in 2006 (15%) and 2007 (38%). In those years, relatively few doctors, nurses, managers and nurse assistants took part. From 2008 onwards there was a more equal division in terms of involvement of different professional groups, although the doctors participated most in the videoconference of 2008 and even more during the first conference of 2009, but after that there was a decline in their participation. The category 'others' was a large category during all years, but especially in 2006 and 2007.

Satisfaction with services

The major factor of dissatisfaction as mentioned by the interviewees was regarded the audio of the videoconferences. This seemed in contradiction with the results from the evaluation forms, which showed in general high percentages of satisfaction with the audio, although these forms demonstrated a decline in terms of satisfaction in recent years as well (Figure 1). However, many expressions of satisfaction about the image and themes of the videoconferences were observed from the evaluation forms. Figure 2 depicts the results of the image assessment by the participants of the seven videoconferences on dengue, with the highest percentages varying between 'good' and 'excellent'. This indicates that the users are very satisfied with the images transmitted through the webcam during the videoconference. In Figure 3, the theme evaluation is shown for the videoconferences held in 2008, 2009 and 2010. Before 2008, assessment of the themes was not yet part of the evaluation forms. The themes of the sessions of all five videoconferences were regarded as 'very interesting' or 'interesting'.

In addition, interviewees indicated that the videoconferences helped them doing their jobs, since they brought knowledge and clarity, positively influenced their attitudes and synthesized actions. Finally, a list of required changes was reported and clarified, with the most important ones being the necessary improvement of technology of the videoconferences, especially the audio, the decoration of an appropriate videoconference room at the health centres, and the high priority to better organize the participation in the videoconferences (Table 1).

DISCUSSION

It was observed from the evaluation forms that the Community Health Agents (CHA) participated most in the videoconferences of 2006, 2007 and 2010, but that they were not even mentioned during the interviews as a participating group. An explanation for this is the fact that some profession categories like the CHA are not included in the decision making process and therefore they remain 'invisible'. Furthermore, it was observed that the number of participants in the dengue videoconferences from 2006 to 2010 declined overall and that the category 'other professions' was a large participating category during all years, especially in 2006 and 2007. Due to the fact that the videoconferences were a new phenomenon at that time, and as curiosity towards the videoconferences was in general high, it could be that during 2006 and 2007 there were a lot of health professionals participating who in practice did not have to do with dengue control and were therefore indicated as 'others'. This is possibly also the reason why the total amount of participants in the dengue videoconferences declined over the years; only those categories that had a particular interest in dengue remained.

The audio of the videoconferences showed to be the major factor of dissatisfaction, is furthermore regarded as disturbing and requires a change. This same problem was already observed and reported in the Telenursing Project of BHTelehealth.[5] A contradictory result was noticed when the evaluation forms reported a positive assessment of the audio of the videoconferences, while the participant observations and interviews showed a dissatisfaction about it. It could be that the results from the evaluation forms are that positive, because the forms are generally filled in by participants that care and are interested in the first place, and are therefore more positive about the videoconferences. It is not obliged to fill in the forms; mostly one person responded for the whole group at a certain health centre. However, when taking a closer look at the results of the audio assessment from the evaluation forms, it was seen that in general the audio is considered 'good', but that these percentages are declining over time (from 66% in 2006 to 33% in 2010); indicating a tendency towards being less satisfied as well. These percentages could be decreasing because of the declining quality of the videoconferences, which is a result of more health centres being connected to the intranet for participation nowadays.

Another required change was to better organize the participation in the videoconferences, as now many health professionals do not get the chance to take part and as many interruptions are made during the sessions. In an earlier conducted evaluation of BHTelehealth, and in its Teledentistry and Telenursing projects, this has come forward as well.[5 6 7] The importance of a good organization of the user's participation was shown for example in the NUTES network project in Pernambuco (Brazil), where the system of turn-by-turn attendance of the health teams was considered a success factor of good functioning videocon-

Table 1 - Summary of required changes/suggested improvements with regard to the videoconferences and as obtained from the data collection.

Practical aspects	Organizational aspects	Others
· Improve technology (audio) · Appropriate videoconference room and equipment · More time to answer the questions · Evaluation after each videoconference · Certificate for participation	· Organize participation of health professionals in the videoconferences · Flexible time tables · Repetition of videoconferences (e.g. a digital archive) · Increase number of videoconferences · Less theoretical lectures · Participation of managers · Education hours · Seasonal videoconferences	· Use a multi-professional approach · Keep the videoconferences of the different disciplines separated · Motivate the managers

Figure 01 - Audio assessment by participants of the videoconferences regarding dengue disease from 2006 to 2010.

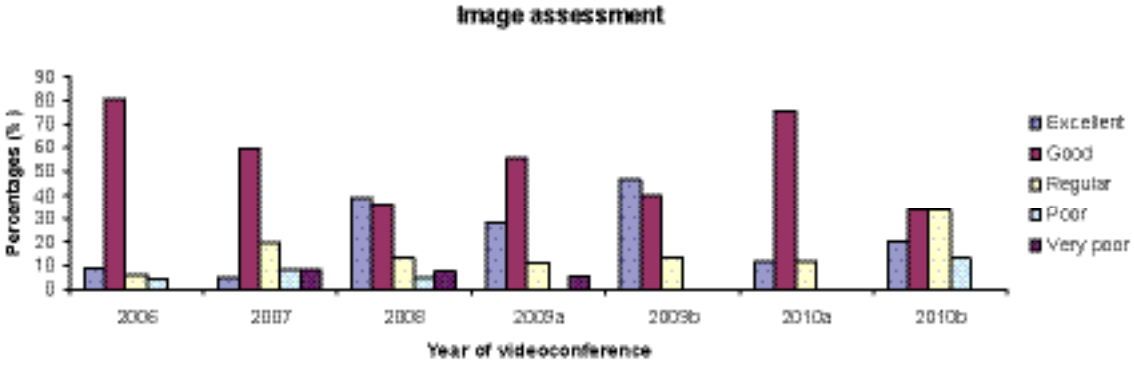

Figure 02 - Image assessment by participants of the videoconferences regarding dengue disease from 2006 to 2010.

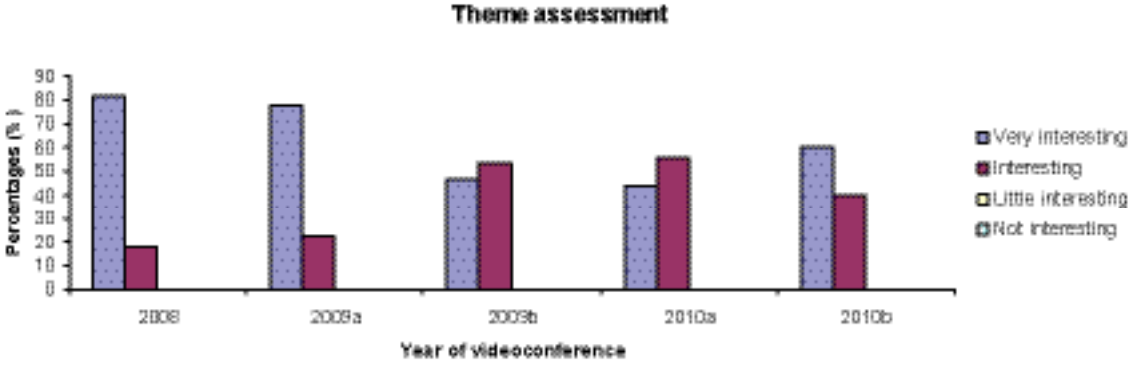

Figure 03 - Theme assessment by participants of the videoconferences regarding dengue disease from 2008 to 2010.

ference participation.[8] Other success factors concerning this aspect were seen in the health centre 'Vista Alegre' in Belo Horizonte, with the registration of the theme, day and time of the videoconference in the activities agenda and on the notification board of the health unit, as to mark the day and time in the participant's agenda.[9] A suggestion for improvement comes from the Teledentistry Project, proposing an adequate policy to enable access to the system at scheduled dates and times[7] and from the Telenursing Project, stating that participation would be higher if videoconferences were recognized as a working activity at the work place.[5]

Looking at more needed changes, it was stumbled upon the necessity for repetition of the videoconference sessions, like in the NUTES - network program (Pernambuco) - where the implementation of digital libraries allowed major flexibility of attendance.[8] Already earlier suggested by an evaluation of BHTelehealth was to re-

inforce the multi-disciplinary approach, in an attempt to overcome the current division of training into the areas of nursing, dentistry and medicine.[6] However, a suggestion from the conducted interviews in the study was to keep the videoconferences of these three disciplines separated. But, if this separation of the disciplines continues, a doctor, for example, will not attend a videoconference for nurses, even if it can be interesting for him as well. And, a manager will probably not allow a nurse to participate in a videoconference for doctors, since it is particularly for doctors (but can be of importance for nurses too). The final required changes that can be linked back to the literature are the decoration of an appropriate videoconference room at the health centres - this problem was already encountered in both the Teledentistry and Telenursing projects[5 7] - and the participation and motivation of the health centre managers. A success factor of the NUTES network in Pernambuco regarding this last aspect was the involvement and participation of the management in the process of announcing the services of telehealth in the health centres.[8] In addition, a success factor of the ophthalmology project in Argentina was the commitment by the management of the institute.[10]

CONCLUSION

In general, satisfaction among users of the videoconferences was high and the sessions were considered as being effective, since they influenced the knowledge, attitudes and actions of the health professionals in a way as was intended by the lecturers of the Health Department. The health professionals acquired more knowledge about the actual procedures and protocols of the disease, and their perception of the disease was broadened and/or changed by taking away misconceptions and bringing clarity. Furthermore, the videoconferences synthesized the health professionals' actions since they assured that every one of them had the same thoughts and ideas about how to act and how to put the theory into practice, and in addition the resources of the health network were revealed, so that these resources could be used to the fullest. However, the videoconference process at the Belo Horizonte City Health Department will need some adaptations or improvements to be able to use it in an even more effective way, with the most important aspects that need enhancement being the technical equipment and the organization of the health professionals' participation.

Recommendations

It is recommended further investigation of the videoconferences through interviews with CHA, because they seem to participate most in the videoconferences about dengue, and a specific evaluation of the audio of the videoconferences, because this is the major factor of dissatisfaction. Moreover it would be wise to review and redefine the functioning of the videoconference process, with particular attention to: (1) the period, (2) time tables, (3) theme, (4) repetition through a so-called "videobrary" or forum, (5) blocking of the health professionals' agenda, (6) a reward for participation in the conference. Lastly we recommend to discuss (inside the Health Department) the other suggested improvements that came forward from the interviews and from the workshop, such as: to diagnose the state of the infrastructure at the health centres and to propose necessary interventions at these centres, the installation of a committee for management of health education only and to re-evaluate the incorporation of videoconferences and other educational activities into the routine of work of the health professionals.

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