

A PATTERN OF HEARING HEALTH EDUCATION

Modelo de educação em saúde auditiva

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ABSTRACT

Purpose: this study intend to show a pattern of education in hearing health with Interactive Teleducation developed by the Speech-Language Pathology and Audiology Department of FOB-USP, emphasizing the importance of creating educational materials at the proposal of professional education and education to the patient in Audiology area. **Method:** it was created a pattern of hearing health education based on the Interactive Teleducation from the union of information about the projects developed and the chronologic survey of the objects of apprenticeship elaboration. **Results:** the results showed the Interactive Tele-education on the creation of an apprenticeship network by the develop of educational materials, capacitating courses, websites and educational projects, involving students of graduation and post graduation courses and the community. **Conclusion:** all the developed proposals with Interactive Teleducation characterized a work that has being improved alongside the years focusing making the knowledge hierarchal, on which the importance must be centered in the multiplication of knowledge, apprenticeship and Hearing Health Education.

KEYWORDS: Telemedicine; Education, Distance; Audiology; Speech, Language and Hearing Sciences

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■ INTRODUCTION

In a country with large geographic dimensions as Brazil, where there is a heterogenic distribution of speech therapists and audiologists, the applications of Telehealth in Audiology area are increasing in a fast time, next to the necessity of decentralization of knowledge and specialized care to professional and patients.

Data from the Federal Council of Speech-Language and Hearing¹ showed that are approximately 35.369 speech therapists and audiologists all over the country, acting in different areas. Although, it is possible to observe higher concentration of professionals in Southeast region, followed by the regions Northeast and South, however, the regions with higher needs of these professionals are North and Center West.

According to the American Speech-Language and Hearing Association (ASHA)², the remote consultation consists in the application of the

technology to send health services at distance connecting professional to patient or professional to professional, promoting any or all the following services: training, counseling, education; evaluation to establish the condition of patient; intervention and remote assistance to professional training.

The Tele-education should be seen as an environment that reunites technologies to improve the educational effectiveness, both traditional methods and distance courses³. In Speech-Language and Hearing Sciences, appears as a relevant strategy to help fill in the demand needs to the education of both professional and population⁴.

The educational practices at distance associated to interactive resources enabled the Interactive Teleducation advent, as a discerning union of the informatics and telecommunication resources based on educational models, stimulating the interactivity and maintaining the interest of student using communication ways efficient and directed⁵.

In this context, the Department of Speech-Language and Hearing of FOB/USP was innovator in Brazil, the creation and development of educational proposals in Audiology, giving priority to professional education, patient orientation, and mainly, the Health Education. Thus, the Tele-education in Audiology is stimulating the development of research and extension projects in the national and international scope, providing higher knowledge and dynamism in the process of diagnosis and intervention in hearing health.

Based on the exposed, this study intent in demonstrate a pattern of hearing health education developed by the Department of Speech-Language and Hearing of FOB/USP, emphasizing the importance of creation the educational materials in a proposal of education to professionals and patients in Audiology area.

■ METHOD

The developed study was qualitative and with descriptive character.

Research Strategy

The research was developed from the union of several materials produced by professors and

researchers of the Department of Speech-Language and Hearing, of FOB/USP following the research line of Telehealth in Speech-Language and Hearing Sciences.

It was developed a chronologic research of the creation of these projects which were pioneer in the area in Brazil concerning the Telehealth, Tele-aid and Tele-education.

Selection Criteria

It was selected all educational material produced, from the year of 1990, in the Audiology area by researchers of the Department of Speech-Language and Hearing of the Bauru School of Dentistry (FOB/USP).

To the survey of the educational materials produced by the Department of Speech-Language and Hearing in the Audiology area, it was considered the following aspects:

1. Year of the material creation: It was selected the produced material from the year 1990;
2. Type of the material produced: It was selected the material produced in the videotape format, CD-ROM, DVD, website, electronic tutor and Telehealth actions;
3. Areas definition: public health in audiology, audiological diagnosis, hearing intervention and rehabilitation;
4. Survey of materials: the search of the material produced was directed by means of a survey done in the professional group and professors involved in the Research Line – Telehealth in Speech-Language and Hearing Sciences – Audiology area, Department of the Speech-Language and Hearing of FOB/USP.

■ RESULTS

In Figure 1 will be presented the educational material produced by the Department of Speech-Language and Hearing area.

In Figure 2 are presented the actions in Telehealth developed by the Department of Speech-Language and Hearing of FOB/USP in the Audiology area.

REFERENCE	TYPE	CATEGORY	DESCRIPTION
BEVILACQUA, MORET e BARBOSA, 1992 ⁶ .	Videotape – Educational Strategies in Hearing Impairment	Continued Education of Health Professionals, professors and students; Parents, patients, Family and orientation of health professionals.	Educational material about the rehabilitation process of hearing impaired patients.
FREITAS, BEVILACQUA, COSTA FILHO, FERRARI, MORET e ALVARENGA, 1996 ⁷ .	CD-ROM “The sound and the silence”	Continued Education of Health Professionals, professors and students; Parents, patients, Family and orientation of health professionals.	Educational Material aiming to inform parents, patients, students and Healthcare professional about the normal process of hearing and the diagnostic of the hearing disabilities.
BEVILACQUA, FREITAS e COSTA FILHO, 1999 ⁸ .	Videotape. Cochlear Implant.	Parents, patients, families and Healthcare Professionals orientation.	The video aims to educate all the Healthcare Professionals in addition to the audiologists about the study and improve of this new technology applied to the treatment of deafness. Also, to be available to parents and others interested in the subject.
BEVILACQUA e MORET, 2001 ⁹ .	Videotape. Course for parents of deaf children.	Parents, patients, families and Health professionals orientation.	Educational material aimed the guidance of parents and families of deaf children.
BEVILACQUA, GONÇALVES e MORATA, 2002 ¹⁰ .	CD-ROM “Worker’s health”	Continuing education of health professionals, professor and students.	Educational material for the training and improvement of healthcare professionals about the worker’s hearing.
BEVILACQUA e BLASCA, 2002 ¹¹ .	CD-ROM “The way of sound”	Continuing education of healthcare professionals, educators and students.	Educational Material for the training and professional improvement in the area of electronic hearing aids devices. Presents a theoretical and practical approach providing clinical reasoning in guiding behavior on patient with hearing impaired
FERNANDEZ, BLASCA, CAMPOS, MORTARI, ALVARENGA, FERRARI, et al., 2005 ¹² .	CD ROM “The sound and the psychoacoustics”	Continuing education for parents, families and health professionals	Educational material for training and professional improvement about the sound and psychoacoustics.
FERRARI e MACHADO (Org), 2007 ¹³ .	Web Site “Portal of babies – Speech therapy”	Continuing education for parents, families and health professionals	Site “Portal of Babies – Speech Therapy”: created as a guidance tool for parents and caregivers of children up to 36 months of age. Provides information about types, technologies, operation, identification and resolution of problems with hearing aids, use and care of these devices and ear mold.
BLASCA e FERRARI, 2008 ¹⁴ .	CD ROM – “Virtual man – Individual hearing aids”	Continuing education for parents, families and health professionals and students; Orientation for parents, families and health professional.	Educational material for information and guidance on the use and care of hearing aids and Individual earmold. For students, professionals and patients.
BEVILACQUA, FERRARI e MARTINEZ, BLASCA, 2009 ¹⁵ .	“Challenges in the fitting of hearing aids with quality – Measures with the probe microphone” (2009)	Continuing education for parents, families and health professionals and students;	Presents through the process of visual verification of hearing aids: audiometry in free field measurements with the microphone probe and its application to adults, children and babies.
ALVARENGA, BLASCA, MORETI e ARAUJO, 2009 ¹⁶ .	CD ROM “Children’s hearing health”	Continuing education for parents, families and health professionals and students;	Educational materials aimed at training for health professionals through distant education on the subject of Child Health hearing.

REFERENCE	TYPE	CATEGORY	DESCRIPTION
BEVILACQUA, REIS, ALVARENGA, MORET, AMANTINI, BLASCA, et al., 2009 ¹⁷ .	Web Site: Hearing Health Brazil	Continuing education for parents, families and health professionals and students	In order to promote professional knowledge, from experience and evidence-based practice related to processes for audiological diagnosis, selection, appointment and adapting individual hearing aids for adults and children with hearing impairment, speech therapy for the population in question and; general information about public policy, services and systems.
ALVARENGA, BLASCA, MORETI e ARAUJO, 2009 ¹⁸ .	Cybertutor – Children’s Hearing Health	Continuing education for parents, families and health professionals and students. Orientation for parents, families and health professional.	Training of community health program of the family
BEVILACQUA, BERRETIN-FELIX, VIEIRA, PRADO, CAMPOS, GONÇALVES, et al., 2009 ¹⁹ .	Web site – Course in frequency modulation system for teachers.	Continuing education for parents, families and health professionals and students	Distance learning course developed for teachers of hearing impaired children who do use or not the System Frequency Modulation (FM) in the classroom.
BLASCA e CAMPOS, 2010 ²⁰ .	DVD – “Knowing and learning about your Hearing Aid”	Continuing education for parents, families and health professionals and students	The educational material includes specific information on the definition of HA, its importance, guidelines on use, insertion and removal of the device.
LIMA e BLASCA, 2010 ²¹ .	DVD – Protocol of selection, verification and validation of hearing aids for the elderly.	Development of multimedia material: emphasis on protocol selection, verification and validation of hearing aid for elderly	Multimedia material (DVD) with content that addresses issues related to the selection and adaptation of hearing aids to facilitate learning of this process, contributing to solving important questions, aiming to successful adaptation.
BLASCA, CAMPOS, ASCENCIO e MORET, 2011 ²² .	DVD – “The communication with a hearing aid”	Continuing education for parents, families and health professionals and students. Orientation for parents, families and health professional.	Educational materials aimed to guide patients, families and health professionals about the process of fitting of hearing aids, emphasizing the importance of knowledge of communications strategies.

Figure 1 – Educational materials produced by the Department of Speech-Language and Hearing of FOB/USP in the Audiology area

REFERENCE	TYPE	CATEGORY	DESCRIPTION
FERRARI, BLASCA e COSTA, 2004 ²³ .	Telehealth forum in audiology	Continuing education for health professional, parents and students. The forum happens since 2004 at the International Audiology Conference.	Discussions about the prospects in Speech, with affiliation to the Brazilian Council of Telemedicine and Telehealth, with a restriction to Audiology Department. The forums have been repeating this same event annually in order to improve this practice. From this, videoconferences are held nationally and internationally, facilitating access to the knowledge of professionals and students.
BLASCA, FERRARI, CRENITE, BRASOLOTO, MEYER, SHAYEB, et al., 2008 ²⁴ .	Exhibition Routes of Communication "- interactive learning environment: a traveling museum.	Continuing education for health professional, parents and students;	Activity initially developed in Bauru, with support from the secretariat of the culture of the state of Sao Paulo. His proposal was to provide the learning of elementary students about the whole process of communication, emphasizing prevention and intervention of problems related to communication.
Projeto Jovem Doutor, 2008 ²⁵ .	Project Young doctor.	Continuing education for health professional, parents and students	Activity developed along with students from elementary, middle, with the participation of undergraduate and graduate – Young Doctor Project – Bauru – conducted since 2008 in partnership with the Department of Telemedicine FMUSP – focuses on contents of Hearing Health and Inclusion of Disabled Persons in school.
ALVARENGA, BLASCA, MAXIMINO, MACHADO, 2010 ²⁶ .	Online course – Children's hearing health	Training on professionals in healthcare	Training of community health workers of the Family Health Program: a proposal for distance education in hearing health.
BLASCA, ASCENCIO e PANELLI, 2011 ²⁷ .	Online Course – Individual Sound Amplification device	Education and Training of professionals in healthcare and in Service Center for hearing impaired.	Training of professionals working in the care of deaf people in institutions linked to PROFIS NETWORK – HRAC / USP.

Figure 2 – Actions in Telehealth developed by the Department of Speech-Language and Hearing, of FOB/USP in Audiology area

■ DISCUSSION

Due to the Technology progress and the speed in which the information need to be acquired, every day becomes more efficient the use of technologies of information and communication (TIC) in an approach directed to health.

In this proposal, the campus in Bauru of the University of São Paulo, with professionals of the Hospital for Rehabilitation of Craniofacial Anomalies and the professors of the Department of Speech-Language and Hearing began, in 90's, a new focus in the projects on Hearing Health, since then, different proposals are being articulated, following new paradigms of education, emphasizing the continuous education of students and professionals.

The development of educational materials was started before the advent of materials such as CD-ROM, in videotape format entitle "Educational Strategies in Hearing Loss" which promotes the creation of computerized educational materials⁶, and next the CD-ROM "The Sound and Silence"⁷. Since that, the Department of Speech-Language and Hearing is developing, with researchers, projects that focus in this area, including productions as theses, dissertations and articles^{11,28,29}.

Similar materials are been developed throughout world, Jeremiah Smith, from Dayton VA Medical Center (EUA), developed the "Hearing Aid Orientation DVD", produced by So Others May Hear, to guide users of HA aiming to add a backup to information about usage and handling the HA,

its content was based on researches and clinical experience of the author.

In this area, there are didactic videos, created by companies of hearing aids, in which are available in their internet pages, to individuals users of HA. The content of the videos approaches orientations about the usage and handling the BTE (behind the ear) HA type, intra-canal, micro-canal and BTE in open fitting, besides earmold cares^{31,32}.

In the United States, in 2004, Robert H. Margolis, professor of the Department of Audiology at the University of Minnesota, has started the Project Audiology Incorporated, aiming to create didactic materials to patients and their relatives³³.

The studies cited above are consonant to the developed projects by the Department of Speech-Language and Hearing of FOB/USP, since they have as common objective to help the professional in the fitting of patients hearing impaired, as also to provide more information to patients and guide them about the care and usage of the hearing aid.

In Audiology, the mainly themes approached are about public health, hearing diagnosis, intervention and rehabilitation, produced in different formats, which each one was adequated to its target public³⁴⁻⁴⁰. Nevertheless, there is difficultness, mainly financial in make available these materials to a large number of professionals, what turns the promotion and access restrict.

Spinardi et al. (2009)²⁹ described several international applications in Telemedicine in the Audiology area, mostly including the Tele-Audiometry, that is, a real time evaluation system of hearing thresholds by internet and the virtual simulations to instruct the Speech-Language and Audiology students, allowing to develop the hearing evaluation in different virtual patients.

Although others instruments has been developed by the Department of Speech-Language and Hearing, in this study were described only those directed to the Audiology area that aimed to assist on the education of professionals and provide explanations about hearing impairments and treatments to users and their relatives.

Adjoining to the São Paulo School of Medicine – USP and the Ministry of Health, the FOB/USP, aims to approach health units, developing technical trainings at distance and even to obtain second opinions and aids to cases that must to be treated by communication in real time, following and distance therapy⁴¹.

The Telehealth applications in Audiology are growing in a fast pace all over the world; however, they still are characterized by the number of small samples and difficultness of multicenter approaches. Besides, the relation cost-benefit, patient acceptance and the refund of these services are aspects widely discussed by professionals, in which the existence of a proper protocol will demand changes to these services may be practicable. Although, recent researches has been enabled a higher explanation and practicability in the application of Telehealth services to the future⁴¹.

The Telehealth in Audiology in Brazil, even if it is recent, already had favorable results in education and assistance area, believing that the usage of technology of information and communication will bring a positive impact in the future of the Brazilian Audiology⁴.

The education, not only of professionals, but patients, families and community agents, makes a productive chain of health to the dissemination of knowledge and improvement of health quality of the population in general⁴²⁻⁴⁴.

■ CONCLUSION

The results showed the Interactive Teleducation in the creation of a learning network from the development of educational materials, training courses and educational projects involving undergraduation and post-graduation students and the community. All these developed proposals feature a work that has been improved during the years focusing in the hierarchy of knowledge, in which the importance must be centered in the dissemination of it, learning and Hearing Health Education.

RESUMO

Objetivo: este estudo pretende apresentar um modelo de educação em saúde auditiva com Teleducação Interativa desenvolvido pelo Departamento de Fonoaudiologia da FOB-USP, enfatizando a importância da criação de materiais educacionais numa proposta de educação profissional e ao paciente na área de Audiologia. **Método:** foi elaborado um modelo de educação em saúde auditiva baseado na Teleducação Interativa a partir da união de informações acerca dos projetos desenvolvidos e levantamento cronológico da elaboração dos objetos de aprendizagem. **Resultados:** os resultados demonstraram a Teleducação Interativa na criação de uma rede de aprendizagem colaborativa com o desenvolvimento de materiais educacionais, cursos de capacitação, *website* e projetos educacionais envolvendo profissionais, alunos de graduação, pós graduação e a comunidade. **Conclusão:** todas as propostas desenvolvidas com a Teleducação Interativa caracterizam um trabalho que tem sido aprimorado ao longo dos anos com enfoque na hierarquização do conhecimento, no qual a importância deve estar centrada na multiplicação do conhecimento, no aprendizado e na Educação em Saúde Auditiva.

DESCRIPTORIOS: Telemedicina; Educação a Distância; Audiologia; Fonoaudiologia

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