Virtual learning environment: occupational therapy contributions to parents and families caring for children with craniofacial abnormalities[1]

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Abstract: Introduction: Cleft lip and palate are among the most prevalent congenital malformations in mankind. The Craniofacial Anomalies Rehabilitation Hospital of the University of São Paulo in Bauru provides assistance for these patients from all over Latin America through a reference interdisciplinary team. The treatment requires several years of intervention and care; parents and caregivers end up facing financial and geographical hurdles to access this care. Thus, the use of virtual tools to improve the communication between health care providers and the adults responsible for children with cleft lip and palate is a potential resource to pass on knowledge. Objective: To create and evaluate a virtual learning environment for the development of children with craniofacial anomalies using occupational therapy techniques. Method: A virtual environment (website) was created using an adapted version of the *Health-Related Web Site Evaluation Form Emory* and then evaluated by five occupational therapists and five speech therapists. The result was subjected to descriptive and quantitative-qualitative treatment, also using the *Emory*'s characteristics and way of analysis. Results: The quality of the website was considered "Adequate" by 81.1% of the respondents and its content according to age groups was considered "Excellent" by 94.3% of the respondents. Conclusion: The use of a virtual environment was relevant since it proved to be adequate and to have an excellent content for which it is intended. This result reinforces the idea that technology can benefit therapeutic processes and increase access to this specific treatment.

Keywords: *Telemedicine, Occupational Therapy, Child Development, Craniofacial Abnormalities*.

Ambiente virtual de aprendizagem: contribuições da terapia ocupacional a pais e familiares na assistência de crianças com anomalias craniofaciais

Resumo: Introdução: As fissuras labiopalatinas estão entre as malformações de maior incidência entre as anomalias congênitas. O Hospital de Reabilitação de Anomalias Craniofaciais da Universidade de São Paulo, em Bauru, assiste a essa clientela de toda a América Latina por meio de uma equipe interdisciplinar de referência. Como o tratamento adequado demanda vários anos de intervenção e cuidados, as famílias das crianças com esse tipo de anomalia acabam se deparando com barreiras de caráter financeiro e geográfico que dificultam o acesso à terapia. Diante disso, o uso de ferramentas digitais na comunicação entre profissionais da saúde e os responsáveis pelos pacientes é um potencial recurso na transmissão de conhecimento. Objetivo: Criar e avaliar um ambiente virtual de aprendizagem sobre o desenvolvimento de crianças com anomalias craniofaciais, usando técnicas de terapia

ocupacional. Método: Foi criado um ambiente virtual (website) usando e adaptando o *Health-Related Web Site Evaluation Form Emory*. O website foi então avaliado por cinco terapeutas ocupacionais e cinco fonoaudiólogos e o resultado foi submetido à análise descritiva e tratamento quanti-qualitativo, também usando as características e formas de análise do *Emory*. Resultados: A qualidade do site foi considerada "Adequada" por 81,1% dos avaliadores, enquanto o conteúdo por faixa etária foi considerado "Excelente" por 94,3%. Conclusão: O uso do ambiente virtual no tratamento de crianças com fissuras labiopalatinas foi relevante, mostrando-se adequado e com conteúdo excelente ao fim ao qual se destina. Isso indica, portanto, que o desenvolvimento tecnológico pode beneficiar processos terapêuticos e facilitar o acesso a este tratamento específico.

Palavras-chave: *Telemedicina, Terapia Ocupacional, Desenvolvimento Infantil, Anormalidades Craniofaciais.*

1 Introduction

Recognized by the World Health Organization (WHO) as an important public health problem, the cleft lip and palate are among the highest incidence of malformations, since one child every two minutes is born with this problem in the world (GARIB et al., 2010).

For Silva Filho and Freitas (2007), the national estimated occurrence is 1:650, corroborating with the occurrence in the world that is around 1 every 700 births (DIXON et al., 2011).

It is relevant to point out that although the cleft lip and palate associated with syndromic frames tend to have genetic, chromosomic etiology or teratogenic origin exhibition already defined or being defined, isolated cleft lip and palate feature complex and multifactorial etiology (SILVA FILHO; FREITAS, 2007; GARIB et al., 2010).

In a work where the authors Garib et al. (2010) studied the etiology of malocclusions is pointed out that in Brazil most of the patients with clefts belong to the least favored socioeconomic classes, data also found by Cerqueira et al. (2005) that report the occurrence of cleft lip and palate in the city of São José dos Campos-SP pointing out that 73.70% of cases investigated affected children from this socioeconomic class. Similar data were found in a study of Baroneza et al. (2005) when they carried out an epidemiological work of people with cleft lip and palate in a specialized institution in Londrina-PR.

This information set important data to propose actions of promotion and prevention in the different levels of the health service system, aiming at the scope of the entire population, even those that are not conducted early to specialized service centers because they in decentralized territories.

Actions like these can promote (re) knowledge of the teratogenic factors related to malformations and, in particular, to cleft lip and palate, as well as to make feasible actions that optimize the development of these patients in the first few years of life, whose daily lives are restricted in many moments to periods of treatment and hospitalization.

As a reference of expert assistance and research in the area in Brazil and with the WHO, the Hospital for Rehabilitation of Craniofacial Anomalies (HRAC-USP), known as "centrinho" in Bauru/SP, appears as a major center in the treatment of craniofacial anomalies and cleft lip and palate, having since its creation in 1967, 79,000 records of patients (FREITAS et al., 2012). Nowadays the records are beyond 100,000 patients.

Another key feature of the assistance offered by the HRAC-USP to its patients and their families is the interdisciplinary work, which, together with the humanized care philosophy established by the hospital since its creation, enhances all its interventions (BASTOS; GARDENAL; BOGO, 2008; FREITAS et al., 2012).

Although the expert assistance Center-tertiary level of health, it is of great importance that the practices and researches developed in this area arrive to other levels of the system.

Considering the communication in health is a potential resource of knowledge transmission and can promote continuing professional training through virtual reality also that results of the recent and accelerated technological development, Telehealth programs can represent an important instrument in this process (ZAMBONATO, 2012).

It is relevant at this point to mention that Christante et al. (2003) suggest reviewing the literature of evaluations given to continuing medical education and distance learning. The authors point out that before the territorial dimensions of our country and the distribution of income, knowledge is in its vast majority restricted to South and Southeast regions limiting at times, access of professionals from other regions to scientific events, national and international conferences, and consequently, updated practices.

Given this, it is understood that distance learning, in this study, specifically Tele-education, can foster

the dissemination of knowledge and practices produced in various research and teaching centers to distant regions of the country, whose needs are probably more evident.

Knowing the characteristics that mark the treatment of children with cleft lip and palate and/or associated anomalies, because all the complexity involved in the treatment and rehabilitation process, with lengthy treatments, occurred with frequency until the child reaches adulthood and aimed at people from different regions of the country that need to travel long distances the practice of occupational therapy (TO) in this context and use of tools such as the Tele-education is justified since these children may, for periods of hospitalization and outpatient treatment, be deprived of everyday activities that organize and guide their neuropsychomotor development and may present damage in their development.

It is noteworthy that, in addition to the focus on baby and child, it is important to look for the caregiver. The full-time residence of parents in the hospital environment, their participation in the care and the nature of the relationship between children, parents and professionals, have unleashed new forms of child care organization in the hospital. In this perspective, the focus is magnified. It is necessary to drive the look for the family as an object of care, in a production process of relationships and interventions, in addition to the clinical care (VIEIRA; DANIELSKI, 2014), because the parents and/or guardians, during the period of the treatment of children with cleft lip and palate and/or craniofacial anomalies, especially in the initial years, may encounter difficulties in their care, due to insecurity caused by hospital characteristics and/or the anomaly itself.

Thus, the health services carry out the family training on taking some care with the baby, since the beginning of hospitalization till hospital release (NUNES; CUNHA, 2014). Such care can reduce anxiety and increase maternal self-confidence in home care (PRIDHAM et al., 2006).

To minimize these factors, it becomes relevant these cases are by occupational therapy practitioners so that they can guide parents about strategies that promote the development of the child in their daily life, transmitting guidelines related to playing, to managing the child in their activities of daily living (ADL's), how to handle them on the lap, dress and undress them, breastfeed. This neurological training optimizes and contribute to the minimization of risks that can harm their development because, as well as games, activities of daily life make up the repertoire of therapeutic resources of these professionals, and

their practice oriented to the development of this area of occupational performance in the subject's life (AMERICAN..., 2014).

In this context, it should be highlighted the role of the OT professional in the assistance team, because, as the *American Occupational Therapy Association* (AMERICAN..., 2014) points out, OT has in its practice structure, the occupations, which are characterized by the activities of daily living (ADL's), instrumental activities of daily living (IAVD's), rest and sleep, education, work, playing, leisure and social participation. These occupations occur mediated by factors related to the client as values, beliefs, spirituality, functions and structures of the body. It is also considered that, to occur in an organized and appropriate manner, skills and performance standards must be intact and must happen in contexts and environments favorable to this development.

Considering this, the occupational therapist, as a member of the multidisciplinary and professional team in the area of health, should promote the development of educational practices and programs that facilitate the promotion, prevention and recovery in this field.

To do so the use of telehealth in terms of Tele-education is considered in the transmission of the practices developed in therapeutic assistance with parents and/or guardians of children with cleft lip and palate. Considering this, the objective of this study was to develop and analyze a virtual learning environment of development of children from 0 to 2 years old.

2 Method

It is an applied research, quantitative and qualitative, of a descriptive type which received approval of the Research Ethics Committee of the HRAC-USP under opinion No. 637,576 and CAEE 28274814.4.0000.5441.

It consists on an applied research, because it results in the development and evaluation of a virtual environment and, as pointed out by Parra Filho and Santos (1998), aims at the creation of new products.

It is characterized as a descriptive research since its proposal is to observe, register, analyze, classify and interpret the facts without the researcher interference, describing the characteristics of certain situations, populations or the establishment of relations between variables (CHIZZOTTI, 1991).

2.1 Procedures for data collection

It was initially created a virtual environment (website) based on child development and implications for therapeutic practice through partnership established between occupational therapists and speech therapist with professionals and researchers in the area of Computer Science (CS) of Universidade Sagrado Coração – Bauru, São Paulo.

To make the website a *framework* was adopted, which is characterized as a free base structure used in the construction of responsive layouts for websites and *mobiles* (GITHUB, 2016).

The virtual environment was also developed using technologies like the programming languages PHP and AIML (*Artificial Intelligence Markup Language*), the MySQL database server, and Artificial Intelligence techniques.

The term PHP is a recursive acronym for "PHP: *Hypertext Preprocessor*", being considered an interpreter. It is understood as an interpreter program that reads a file containing the code to be executed and acts immediately on it. The code in this file is called source code. In general, this code can be read and understood by a person, generating an interpreted language (BUYENS, 2002). The PHP programming language was obtained for free through the official website (PHP..., 2016).

MySQL is a database management system (DBMS), which supports several programming languages. It is characterized by Buyens (2002) as a database software that supports the database query language SQL (*Structured Query Language*) which is a communication pattern with databases of any type, regardless of the underlying methods to write and read the data.

AIML is an XML-based language (*Extensible Markup Language*) that works with a set of pairs, which consist of a question that is made by the user and a response that is returned by the conversational agent (OLIVEIRA, 2010).

For Macedo (2012, p. 49) the AIML language "[...] is able to represent and relate expressions in natural language, allowing the creation of robotic engines capable of maintaining a simple dialogue".

Artificial Intelligence is a kind of intelligence produced by man to provide the machines of some kind of skill simulating human intelligence (FERNANDES, 2005).

According to Cunha and Ribeiro (1987), Artificial Intelligence is considered a part of computing that seeks to make a machine smarter by using algorithms and techniques that represent situations considered specifically as human.

At the time of virtual environment tools programming and construction, the content that composed them were fostered by the researcher from bibliographic surveys of technics and theories applied in the area of child development, as well as in the case of images, videos and audios that were produced and/or correspond to the personal file of the author.

As theoretical references to compose the contents of the virtual environment, we used books, articles and theses, from 1984 to 2015, which focused on craniofacial anomalies, cleft lip and palate, child development, child health, occupational therapy and speech therapy, as the work of Trindade and Silva Filho (2007), Altmann (2005), Béziers and Hunsinger (1994), Liddle and Yorke (2006), Brandão (1984), Cavalcanti and Galvão (2007), Estivill and Arboledas (2014), Case-Smith and Brien (2010), Bee (2003), Piaget (1967, 1971, 1991), Gesell and Amatruda (2000). These materials based the texts, contents of the videos and other tools of the website.

For the videos production were asked called responsible for children from 0 to 2 years old to participate in the recordings. Aware about the exposure of their children images in a website resulting from the doctoral thesis, they signed the permission form for using the records for scientific purposes. Those responsible were the mothers of children with and without cleft lip and palate and craniofacial anomalies, whose children were recorded and/or photographed in moments of occupational therapy sessions at the HRAC-USP or on appointments in USC scheduled in advance directly by the author of the project, who is also a professor in that institution.

The footage and images were formed from materials that illustrate and guide what is expected from the child in their development phases, considering social-affective, motor, language, cognitive, aspects related to daily activities and playing.

As well as the children recording, guiding video related to the topic were produced with the professionals involved in the project, being these two occupational therapists and a speech therapist.

A tool that makes up the environment was created exclusively for this job – the conversational agent TeO, a Natural Language Processing system (NLP-*chatterbot*) in AIML.

NLP deals with aspects of human communication in a computational way, such as sounds, words, sentences and speeches, considering references and formats, structures and meanings, contexts and uses. In broader sense, the NLP makes the computer to

communicate in human language (GONZALEZ; LIMA, 2003).

According to Levine, Drang and Edelson (1988, p. 25) the goal of NLP "[...] is to allow the user to 'speak' with the computer in human language, such as English or Portuguese, and make the computer to respond in the same language".

The Natural Language Processing, for Siqueira (2011), aims to simulate the human capacities of communication and interpretation, also called Natural Languages, in a computational form, using to this end, knowledge representation techniques. The use of the NLP is paramount for various areas of human knowledge and has important applications of social, economic and educational nature, being in this project applied to the area of health.

To the proposition of TeO, we used a standard knowledge base containing greetings, name or topic specific knowledge base, unknown sentences treatments, among others, and another base, healthcare-specific, with information about child development.

After the completion of the virtual environment development, the participants of the research evaluated it.

2.2 Participants of the research

After the time of development of the virtual environment, the same was submitted to 10 evaluators, five occupational therapy professionals and five speech therapy professionals, with minimum of one-year training and experience in the area, which assessed the level and appropriateness of content in the face of the goals of the research.

It should be noted that before the moments of evaluation of the environment an invitation letter was sent to participants clarifying about the goals and methodology of the work. To complete these procedures, evaluators who agreed to participate in the study, accepted and signed an informed consent in the website were part of the sample.

2.3 Data collection instrument

The questionnaire adapted from *Health-Related Web Site Evolutation Form Emory* was used for evaluation (UNIVERSITY..., 1998). The Emory instrument consists of 36 questions divided in scales: content, precision, authors, updates, public, browsing, links, structure.

The options of response to each item of the scale ranges above are identified as "agree" with two

points, "disagree" one point and for some items the response option corresponds to "does not apply", to which zero point is assigned. At the end of the application of the instrument, the calculation of the total points was obtained by multiplying the amount of evaluators by the value assigned to the answers, two for "agree" and one for "disagree" and the number of possible points was calculated.

To find the final result in percentage, the formula described in the questionnaire Emory was used, being the percentage of total possible points the result of multiplying the total score obtained by 100, divided by the total score possible, as shown below.

$$\frac{\text{Total score obtained} \times 100}{\text{Total score possible}} = \frac{\text{Percentage of}}{\text{total score possible}} \quad (1)$$

The percentage obtained represents the quality of the virtual material, and if the result reaches at least 90% of the points is featured as *excellent*, reaching at least 75% case, the environment is evaluated as *suitable* and less than 75% as *poor*.

The description of this assessment is presented in Table 1.

2.4 Data analysis form

From the collection of the data obtained with Emory, they were submitted to descriptive analysis and quantitative and qualitative processing of the results according to the characteristics and form of analysis proposed in the instrument itself.

3 Results

The process that involved this work allows the presentation of the results with regard to steps taken to its preparation and the results of the process that involves the website assessment by the participants of the research.

Initially, the production of theoretical content for the website was carried out, made of texts in simplified language, available to the profile of the customers for which it the work is intended (children parents and guardians), the logo, images and videos that make up the look of the website were also created.

To create the logo, there was initially the name idea. Considering the work comes from the studies of a professional in occupational therapy (OT and TO in portuguese), we thought to remark that reference on the of the website name associated with the process of child development, the name TO Grow (Figure 1), in which "I'm Growing" is

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understood. In addition to transmit OT importance on the website name, it was associated with several terms used in the layout. At the same time tabs and tools that make up the website and their respective content were bounded. The tabs and tools available in the environment are: top (Figure 1), home (known as "TO Grow"), "TO Develop", "Follow your Baby", "Talk with TeO", "More" tab on which there are items relating to download, kinks of interest, news, bibliographic reference, glossary, meet the authors. At the bottom "Authors", "Doubt" and "Evaluate the website" items.

In the *home* "TO Grow", there is a presentation of the environment, indicating the objective, to whom and by whom it was created.

In the tab "TO Develop" there is information related to child development, from 0 to 2 years old, divided into the periods of 0 to 3 months 3 to 6 months 6 to 9 months 9 to 12 months, 12 to 18 months and 18 to 24 months. It also features items with information related to the development of hold and adapted resources. In this tab, the word "TO" is conveyed through the ages, 0 TO 3 months and so on. The issues presented in each age, related to cognitive, motor, affective, social aspects, daily activities, playing and talking, were named as "TO Move", "TO think", "TO Interact", "TO do", "TO play" and "TO say", respectively.

The "Follow your baby" section is a tool in which the user of the virtual environment can, through a checklist answered with yes or no, identify the present or absent behaviors in the development of their child. This instrument was based on different scales of infant development assessment, as Denver II, Frankenburg et al. (1992), Werner (1994), the operated Portage Inventory of Williams and Aiello (2001), the scale for evaluation and standardized monitoring Pinto, Vilanova and Vieira (1997), the ELM-Scale *Early language Milestone Scale* of Coplan, Gleason and Ryan (1982) and assessment of neuropsychological development of Gesell and Amatruda (2000) addressing aspects related to the motor development, social-affective, cognitive and language. From the selection of the items, the resource provides a feedback to the user of the

Table 1. Punctuation and classification of virtual environment according to the questionnaire Emory.

Evaluation	Description	
Excellent – at least 90%	This environment is an excellent source of health information. Consumers can reach and easily understand the information contained in this site.	
	Do not hesitate to recommend this site to your customers.	
Suitable – at least 75%	This environment provides relevant information and can be navigated without many problems, however, may not be the best virtual environment available. If another source of information cannot be found, this resource will provide good information to the client. Caution must be taken when chatting with your client about the information found in the virtual environment and when the information is really necessary.	
Poor – less than 75%	This virtual environment should not be recommended to clients. The validity and reliability of the information cannot be confirmed. All the resource may not be accessible. Browse other virtual environment to prevent false or partial information to be read.	

Figure 1. Logo and tabs at the top *home* of the website.

environment, guiding them to pay attention to the development of some aspects of their child and go to the tab "TO Develop" to learn about different forms of stimuli that can assist in promoting the development of the child in question.

This tool was built using the PHP programming. From the programming and definition of categories like motor development, social-affective, cognitive and language, the system became able to track the less developed areas in the baby, whose responsible answer to the tool. Given this, the system generates a response that emphasizes the specific guide to the user, indicating in which category the child needs further stimuli and directing them to seek information on the tabs of the website.

The tool "Talk with TeO", the *chatterbot*, built for this study can be characterized as a robot and was linked to an appearance and named as TeO (Figure 2).

The specific knowledge base was developed by means of questions and answers and in order the *chatterbot* could do a better recognition of the Portuguese language, adjustments were made for the accent and spelling. To better target the conversational robot user, a field suggests what are the questions most frequently asked by users, and to avoid repeating suggestions in every access they were stored in a database and selected at random. The system was tested in two ways, through Functional Testing and through simulations of conversations made to verify each functionality present in the *chatterbot*; it presented a satisfactory performance with the subjects approached by the patients. Figure 2 illustrates the simulation of a conversation with TeO.

As already mentioned, it can be found at the bottom of the website *home* page the icons "Authors", in which are presented the authors responsible for the work, "Doubt", in which the user finds another way to access the *chatterbot* TeO and "Evaluate the website", which is a tool that enables the users of the website, when in the public domain, can evaluate it.

It should be noted that all content that makes up the website looks for reaching parents and guardians of children with and without cleft lip and palate and craniofacial anomalies. Therefore, content approached include development and behavior patterns, as well as specific guidelines to clients with cleft lip and palate and related anomalies.

After the build process and implementation, the website passed through evaluation, in which participated ten professionals, being five occupational therapists and five phono audiologists. Occupational therapy professionals have a doctor's degree, three count with a master's degree and one is a specialist. Two professionals have a time of training and expertise in the area of more than ten years, one professional with five to ten years and two professionals from one to five years of experience in the area of child development.

Speech therapy professionals participants, a doctor, three teachers, and a degree, being three of them active in the area of child development for over ten years, one of them in the period between five and ten years and an active in time from one to five years.

As a result of the evaluations carried out by professionals as the quality representation of the virtual material, the eight scales of Emory questionnaire were considered, allowing the analysis of results considering the items: content, accuracy, authorship, updates, public, browsing, external links and website structure. These scales are divided by the numbers of questions of Emory instrument, as presented in Table 2.

Figure 2. Simulation of conversation with TeO.

Table 2. Emory questionnaire score, distributed by rating scales.

Questions	Emory Scale	Emory %
1 to 6	Content	90.8
7 to 9	Accuracy	61.6
10 to 12	Autorship	88.3
13 to 14	Updates	82.5
15 to 18	Public	91.2
19 to 24	Browsing	71.6
25 to 30	External links	96.6
31 to 36	Structure	64.1

Score greater than or equal to 90% = excellent quality; Score between 75% and 89% = suitable quality; Score less than 75% = poor quality.

Table 3. Emory questionnaire score, distributed by website pages.

Website pages	Emory %
0 to 3 months	96
3 to 6 months	94
6 to 9 months	94
9 to 12 months	94
12 to 18 months	94
18 to 24 months	94

Score greater than or equal to 90% = excellent quality; Score between 75% and 89% = suitable quality; Score less than 75% = poor quality.

Similarly, the overall score of the questionnaire was done for the items "I agree", "I disagree" and "does not apply", disregarding the scales separately. In this way, the obtained score was 584, being that considering the number of participants the total score possible is 720. According to the proposed analysis, the corresponding percentage was 81.1%, which indicates the quality of the site as Suitable.

To describe the results of the questionnaire about the contents of each page for ages that the website covers, was also adopted by the analysis adapted by Emory questionnaire score (Figure 2), being considered the options of response to each item of the scale as "very good", with five points, "good", with four points, "regular", three points, "bad", with two points, "too bad" one point, and for some items the response option corresponds to "does not apply", which was awarded zero point.

In Table 3 the percentages obtained in the questionnaire about the quality of the contents by age group in the pages of the website are presented.

Considering the overall score of the questionnaire for items shown in Table 2, which was 283, with a total possible score of 300, considering the number of participants, the percentage corresponding to the

evaluation of the content by the participants as to the age groups included in the study was of 94.3%, which indicates the quality of excellent content.

4 Discussion

The proposition of a virtual environment designed by an occupational therapy professional aimed at parents and/or guardians of children based on the subject of child development and care of children with cleft lip and palate, can be extended to children with craniofacial anomalies associated with the without anomalies, is attached to the current technological development and raises advances leading important benefits for health care projects, which multiply and promote knowledge sharing and the best qualification of the assistance provided in the area.

To this end, this work was based the proposals of Telehealth programs that constitutes a form of transmission health-related services or information through telecommunication infrastructure technologies, including, according to WHO (WORLD…, 2010), the provision of health services in cases where the distance is a critical factor, enabling the achievement of clinical services (diagnosis, treatment and prevention of diseases) and non-clinical elements of the health system, such as research, evaluation and education.

Considering the relevant contribution of Telehealth and Tele education in health practices, the development of virtual learning environments, as this work, may represent a breakthrough in health service methodologies, such as the work of Picolini et al. (2013), who elaborate a virtual environment of learning about Genetic Syndromes and consider Telehealth as an efficient strategy used in the provision of health services, which is promoted by means of information and communication technologies to situations in which the physical distance and/or time can be an obstacle to access to information geared to health. In this same context, this work tried as Costa et al. (2013), from specialized guidelines, to become a means of effective communication for the promotion of health, since it promotes the exchange of knowledge as well as the simple release of information to parents and/or guardians of children with cleft lip and palate and/or craniofacial anomalies that sometimes live in national territories distant from the specialized rehabilitation center.

In addition to the proposal of a contemporary methodology for assistance in health, it turns out that a virtual resource can reach a greater number of people, optimizing the arrival of specialized public information limited to the precariousness of the assistance offered in their place of origin, as is the case of many families of children currently assisted at

HRAC-USP, which is a service program in partnership with the SUS, specialized in rendering services to people with craniofacial anomalies and associated syndromes, in which the treatment involves the action of an interdisciplinary team and demand several years of care and intervention, and the difficulties faced by families go from geographical to financial matters to access the treatment (GRACIANO et al., 2015).

This is evidenced by Melo et al. (2010) that, by using video conferencing to train community health agents about hearing health, record efficiency in training professionals in decentralized and poor areas, since, from the use of these tools, the professionals become multipliers of expert assistance and promote not only health, but also encourage and monitor families in relation to the care provided to the child and can optimize the early identification of problems.

It is notice that the content systematization available in these environments and responsiveness of the technological resource used are fundamental to ensuring the transmission of adequate knowledge to the target audience, however it should be used to complement face-to-face methods, in order to achieve the expected results in assistance.

Wakeford et al. (2005), when talking about the positioning of the AOTA on the use of technologies in occupational therapy assistance, mention that the appropriation of this tool as a therapeutic resource in the area, although it offers many new opportunities in the provision of services, is still consolidating, however it has be effective in different areas, whether it is in the process of evaluation, intervention, consultation, education and supervision of students or other professionals.

Cason (2012) mentions that Telehealth applications on OT turn to programs aimed at developing skills incorporating assistive technologies and techniques adapted to create opportunities that encourage routines based on health promotion, as well as changes in work, home, school, and other environments, making them more efficient to occupational performance of the subject involved in the assistance.

The author even describes that, when aimed at children, OT, through telehealth, promotes the development of skills common to the age and improves the quality of life of children with developmental delays and disabilities.

As it is possible to identify, currently there is the participation of occupational therapists in actions involving Telehealth, but there are still few studies involving the subject and, regarding to Brazil, telehealth and telemedicine are nowadays more structured towards the medical field in the basic

attention and exchanges of information between specialized and non-specialized teams.

It was also found as a result of this work that, when submitted to the evaluation of occupational therapists and speech therapists, the environment was judged as suitable for the purpose for which it was intended, and still evaluated as excellent and suitable most items valued of Emory instrument. These findings indicate that although the material has a good quality, the same must be carefully organized to release and continuing assessment to review and update the data provided in this virtual environment is essential to reach the goal.

The quality of the contents by age group in the pages of the site was considered excellent. From that, it is possible to identify that the virtual environment, when judiciously systematized, can contribute to the expansion of means to access to specialized information of occupational therapy aimed at child development of children from zero to two years old.

Considering this, and from the development of this work, arise as main challenges to enlarge and consolidate the OT assistance provided in this context, the successful articulation of health care and technology professionals. In this way, the subjects should approach the specific knowledge of other area for greater responsiveness and functionality to elaborate and implement the methodology since, as seen from the environment assessment, this is considered adequate for the purpose to which it is intended. This said, it is expected that the material can be improved in the future and will be used as an additional resource for promotion, prevention and recovery of child development. It is understood that the multidisciplinary proposal presented, which included informatics as a tool of support in occupational therapy practice, can promote greater interaction between families and professionals and, consequently, facilitate to improve treatments results.

5 Conclusion

The virtual learning environment produced was reviewed positively by specialized professionals, which gives high applicability to the resource because it meets the criteria of a virtual learning environment, as content, accuracy, browsing and structure.

From the development of this study we verify that the proposition of virtual environments for parents and/or guardians of children with craniofacial anomalies on the subject of development is relevant, since it is supported in contents and strategies currently focus on distinct populations that correspond to the minority of the population,

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being sometimes, people who have the possibility to only access health service centers in person for these demands. However, it was also found that, even aware to develop a resource accessible to everybody, the language and tools used in virtual environments, sometimes do not fit to the real needs of the target audience. The question is whether the responsiveness and functionality of these environments have been sufficient and, in this sense, we identified a need for detailed analysis before reaching the audience to which they are intended.

To this end, it is essential to the joint, the articulated and team work and of the professionals in the field of health and technology. The relations established between them will predict the success of the proposed virtual environment, because there is a need of disciplinary knowledge appropriation and an interdisciplinary form of applicability.

Considering this, it is understood that this factor is the main challenge, since knowledge are distinct and the technical language of the areas can be an obstacle to effective communication between those involved and a more suitable feasibility of the proposal. As to the contribution of occupational therapy, it was identified that even the existence of works that deal with child development and that are also associated with virtual environments and technological resources, none of them proposed to direct guidelines to the assistance of children with cleft lip and palate and craniofacial anomalies what confirms the relevance of the present study.

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Author's Contributions

Lyana: data collection and design of the text. Márcia Cristina, Élvio Gilberto, Luciana Paula: Orientation and text corrections. Caroline and Patrick: Fonts organization and text revision. Helcio and Leonardo: Data collection and text review. All authors approved the final version of the text.

Notes

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