

Breastfeeding: Use of Information Technology as a strategy for the creation of a website*

Aleitamento materno: uso da Tecnologia da Informação como estratégia para a construção de um *website**

Lactancia materna: uso de la Tecnología de la Información como estrategia para diseñar un sitio web

Myrcea Nunes Dellalibera^I, Débora Fernandes Coelho^{II}

Abstract: Objective: to describe the process to create and develop a website focused on breastfeeding guidelines. **Method:** a study involving the creation of a product of the Professional Master's Degree in Nursing, focused on communication in health. The Definition, Architecture, Design and Implementation method was used to create the website. **Results:** a website was created with content on breastfeeding, using simple, inclusive and easy-to-understand language. The use of figures and videos allowed for an appealing design and an intuitive organization. **Conclusion:** the product was elaborated and based on the best scientific evidence, in a systematized and logical manner, in order to promote easy and didactic navigation.

Descriptors: Breastfeeding; Information technology; Internet; Computer communication networks; Health education

Resumo: Objetivo: descrever o processo de criação e desenvolvimento de um *website* focado em orientações de aleitamento materno. **Método:** estudo envolvendo a construção de um produto do Mestrado Profissional de Enfermagem, com finalidade de comunicação em saúde. Para a elaboração do *site* foi utilizado o método *Definition, Architecture, Design and Implementation*. **Resultados:** construiu-se um *website* com conteúdo sobre aleitamento materno, com linguagem simples, inclusiva e de fácil entendimento. A utilização de figuras e vídeos permitiu um *design* atrativo e uma organização intuitiva. **Conclusão:** o produto foi elaborado e embasado a partir das melhores evidências científicas, de forma sistematizada e organizado de maneira lógica, a fim de promover uma navegação fácil e didática.

Descritores: Aleitamento materno; Tecnologia da informação; Internet; Redes de comunicação de computadores; Educação em saúde

Resumen: Objetivo: describir el proceso para crear y desarrollar un sitio web enfocado en pautas de lactancia materna.

Método: estudio que implicó la creación de un producto de la Maestría Profesional de Enfermería, con el propósito de facilitar la comunicación en materia de salud. Para elaborar el sitio web se empleó el método *Definition, Architecture,*

^I Nurse, Master's Degree in Nursing – UFCSPA, Maternal-Child Specialist – FCSMV, Federal University of Health Sciences of Porto Alegre. Porto Alegre, RS, Brazil. E-mail: myrcea.dellalibera@gmail.com, Orcid: <http://orcid.org/0000-0001-9417-3823>

^{II} Obstetric Nurse, PhD in Nursing – UFRGS, Master's Degree in Nursing – UFRGS, Specialist in Prenatal Care Nursing – UNIFESP, Specialist in Gender and Sexuality – UERJ, Federal University of Health Sciences of Porto Alegre. Porto Alegre, RS, Brazil. E-mail: deborafe@ufcspa.edu.br, Orcid: <https://orcid.org/0000-0002-4535-2611>

* Extracted from the dissertation entitled "Breastfeeding: Creation of a website for its support, promotion and protection", Graduate Program in Nursing, Federal University of Health Sciences of Porto Alegre, 2020.



Design and Implementation. **Resultados:** se creó un sitio web con diversos contenidos sobre lactancia materna, con idioma sencillo, inclusivo y fácil de entender. El uso de figuras y videos permitió lograr un diseño atractivo y una organización intuitiva. **Conclusión:** el producto se elaboró sobre la base de las mejores evidencias científicas disponibles, en forma sistematizada y con organización lógica, a fin de promover una navegación sencilla y didáctica.

Descriptores: Lactancia materna; Tecnología de la información; Internet; Redes de comunicación de computadores; Educación en salud

Introduction

Given the current world scene, breastfeeding is a topic that has been increasingly researched over the past few years. This is due to the fact that a number of studies proved its benefits both for the woman and for the child. Breastfeeding could prevent 823,000 deaths in children under the age of five and 20,000 deaths in women due to breast cancer annually worldwide, regardless of social class.¹

The World Health Organization (WHO) and the Ministry of Health (*Ministério da Saúde*, MS) encourage breastfeeding. The recommendation is that all children initiate breastfeeding within the first hour of life and are exclusively breastfed until six months of age. After this period, breastfeeding must be maintained and complemented with a healthy diet for at least two years.²

However, the breastfeeding rates are still below the WHO recommendation. In the last study that analyzed the trend of the practice indicators over the last 34 years, the preliminary results showed an advance in the exclusivity rates in children under six months old, in which the percentage was 45.7%. This shows an increase of 4.7 percentage points in 22 years when compared to the last Brazilian survey in 2008.³

Seeking better outcomes and, thus, aiming to reduce malnutrition and infant mortality rates, many strategies have been used as actions to support and encourage the practice. Public health policies were created to reinforce, adapt, expand and integrate interventions and strategies related to breastfeeding. These actions are carried out by qualified health professionals involved in maternal and child care and, despite all efforts to promote breastfeeding exclusivity up to the child's

six months of life, it is known that there are many difficulties encountered in the process. Beliefs, women's unpreparedness to return to work, the influence of inappropriate practices, the industrialization and creation of products considered inappropriate and also the influence of marketing on artificial foods are factors that contribute to these difficulties.⁴⁻⁵

In addition to that, it is known that the influence of the social media is currently of great importance with regard to information. The Internet provides fast dissemination of information, comprising a large number of people, enabling the construction of collective knowledge. It facilitates everyone's participation in the learning process and favors changes in behaviors. Thus, information technologies are highlighted as tools capable of generating people's interest in the topic.⁶⁻⁷ A number of studies included in an integrative review indicate that professional support, along with education in health and the use of information technologies, provides positive contributions to the increase in the breastfeeding rates, and nurses play a fundamental role in the creation of new technologies.⁶

The tools developed from the information technologies for health serve as an important complement to patient care. Health professionals, especially nurses, are increasingly developing and applying these resources in the maternal-child area, with the objective of promoting and educating women and their support network. Just as the Internet can positively influence evidence-based information, the opposite can also occur: dissemination of inadequate and poor-quality information. By visiting some websites available online and addressing the same theme, it was observed that there is lack of quality information and an excess of pages containing information based on people's own experience, such as blogs and exchange of experiences with other mothers.

Breastfeeding is a period of great insecurity and full of doubts. The purpose of this academic paper is to provide breastfeeding women and their support network with a means to acquire knowledge quickly, easily and reliably. In this context, the objective of the study was to describe the process to create and develop a website focused on breastfeeding guidelines.

Method

This is a methodological study of technological production that involved the development of a product of the Professional Master's Degree in Nursing, targeted at creating a website with content and guidelines about breastfeeding based on scientific evidence.

The study was conducted in the Federal University of Health Sciences of Porto Alegre in 2019 and 2020. For the creation of the website, there was the collaboration of a student from the Biomedical Informatics course at the aforementioned University.

For the elaboration of the website, it was necessary to use a method that allowed access to information in an organized and structured way that would serve different readers, this methodology being a set of standards, procedures, techniques and analysis tools that define the desired standard for planning educational systems or applications.⁸

The DADI (Definition, Architecture, Design and Implementation) method was chosen to create the product. This methodology allows for better organization regarding division of tasks, gathering of information, choice of the layout, and implementation of the programming. It comprises four stages: definition, architecture, design and implementation.⁷

In the “definition” stage, the objectives, target audience and contents were stipulated, that is, planning was carried out of all the subject matters and resources necessary to develop the website. The purpose of the website defined was to provide information, guidelines and updates on breastfeeding. The target audience chosen was pregnant women, breastfeeding women, their support network and people who are interested in the topic, such as health professionals and students.

As for the content, an online search was carried out to identify the theoretical framework relevant to the proposed topic. For the theoretical basis of the website content, primary care manuals from the MS and the Food Guide for Brazilian children under 2 years of age were used, as well as a textbook and articles on breastfeeding.^{2,9-10}

The second stage, defined as “architecture”, consisted in structuring the contents and planning interactivity with the user and navigability, in order to facilitate access to the content. Content organization was performed according to its importance and hierarchy. In the information architecture, the topics were grouped, identified and separated into four main categories. They were arranged in the menu options as follows: “knowing mum”, “breastfeeding”, “problems in breastfeeding” and “breastfeeding accessories”. In addition to these pages, there is also a “home page”, and “about us” and “updates” pages.

The “design” stage is the creation of the website, in which information was organized and structured in a way that facilitates visualizing the website. This phase included choosing the font type and size, images, videos, color palette and review of the texts. The researcher chose to use the “Google Sites” tool, due to its ease of access and free option, with no cost to the researcher and users. Another factor in choosing this tool was the website's appeal, which allows for a more dynamic and attractive teaching and learning experience. The contents were arranged on each page, keeping a relationship with the figures, photos and videos for a better understanding of the subject matter, avoiding possible misinterpretations. The texts were written in simple language, easy to understand and seeking, to the extent possible, the use of inclusive language.

The last stage of the method was “implementation”: it concerns testing all functions, checking links, videos, navigability and interface. In this stage, the website was presented to the public opinion of specialists in the maternal-child health area, with an emphasis on breastfeeding, through a video conference. Four nurses working in the maternal-child area, a nutritionist, the academic advisor (an obstetric nurse) and a student from the Biomedical Informatics Course were present at the meeting. It lasted two hours and a half and consisted in the specialists' public opinion on the website layout and content. In the group discussion, reviews to the explanatory texts were suggested for an inclusive language perspective, as well as diversification of the images, denoting the most varied races that represent people. Another suggestion was incorporating explanatory

videos on the topics, such as an option for visually impaired people. After the meeting with the specialists, all pages were finalized and tested, followed by launching the website with its dissemination on the network. In this stage, the website was also monitored by means of the *Google Analytics* tool.

This paper was not submitted to the Research Ethics Committee for not being a direct research study with human beings, according to Art. 1 - Item VII of Resolution 510/16. It respected all the ethical and scientific requirements, based on Resolution 510/16, and on Law 9,610/98 of the Civil Office.¹¹⁻¹²

Results

The website resulted in a seven-page document, with 47 figures, 10 photographs and eight videos. The website called “*Aleitamento Materno*” (“Breastfeeding”) can be accessed through the following link: <https://sites.google.com/view/aleitamentomaterno>.¹³

The website’s home page contains information regarding the context of breastfeeding, its recommendations and benefits, as well as updates on the topic. On this page, the reader will have the possibility of communicating with the author by means of a form. Clicking on the “*Enviar mensagem*” (“Send a message”) item will open a page with a form to write comments, doubts and suggestions.

The second page of the website is “*Sobre este site*” (“About this website”). It contains information such as: objectives, target audience, justification, authorship and collaboration. A video introducing the website at the top of the page was produced by the author to explain what can be found in it.

The third, fourth, fifth and sixth pages refer to the specific content on breastfeeding. On every page, important phrases were highlighted on illustrative posters to draw the reader's attention. In its last tab, “*atualidades*” (“updates”), the website also brings up some subject matters

related to the topic, such as human milk bank and specific updates and guidelines on COVID-19 and breastfeeding. There is also a space called “*Palavra de Especialista*” (“Specialist’s Opinion”), in which a video made by an international breastfeeding specialist and consultant offers tips on the topic.

The monitoring of the website was carried out through the *Google Analytics* functionality, which allows visualizing and monitoring the website's visit statistics, as well as demographic variables and type of resource used to access, among others. Within a month of launching the website, 620 sessions were obtained. Sessions are the total number of visits within the stipulated period for monitoring. The number of users who entered the website once within the period analyzed was 430. The mean duration of the sessions (visits) was 02 minutes and 54 seconds. This value shows the time that the visitor spent on the website. The number of page views was 1,794; this represents the mean number of pages a visitor accessed on the website.

Regarding the age group of the users who accessed the website, it is noteworthy that, of the 191 users identified, 69 (36%) were between 25 and 34 years old, followed by the age group between 35 and 44 years old, with 34 individuals (17.8%). In relation to gender, it was possible to identify 197 users, of which 132 (67%) were female and 65 (33%) were male. It was verified that, of the 430 users identified, 393 (91.4%) of the accesses were from Brazil, but there were also accesses in other countries: 24 (5.6%) in the United States, 5 (1.16%) in Italy, 3 (0.70%) in Spain, 1 (0.23%) in Canada, 1 in Australia, 1 in Colombia, 1 in France and 1 in the United Kingdom.

Another item analyzed was the type of device used to access the website by the user: it is verified that, of the 430 users identified in the *Google Analytics* platform, 340 (79%) used their cell phones, 85 (19.77%) used their computers and 5 (1.16%) used their tablets as access devices. It is noted that an intuitive, easy-to-navigate and responsive website was developed, which enables access by various devices.

Discussion

Currently, and through the creation of websites, the Internet allows for the transmission of knowledge based on scientific evidence and the researcher's professional experience, enabling people to have quick access. Information technology has increasingly been used as an educational practice strategy for the support, promotion and protection of breastfeeding by nurses working in this area. Therefore, through the resources available in the technological environment, nurses are able to efficiently and comprehensively promote the knowledge built for the target audience, through teaching, research or care.¹⁴

There is a multitude of websites developed in an unstructured way, with confusing information and difficult accessibility. In the website, the intention was to incorporate diverse information on the entire process involving breastfeeding, including care based on manuals from the MS and the Brazilian Society of Pediatrics. The contents were selected and later categorized by topics to facilitate reading and understanding of the information by the users. An effort was made to use simple, inclusive and informal language to reach all audiences. The information made available in a simple and intelligible manner improves the expectation and possibility of knowledge acquisition. This enables the target audience to develop their ability for autonomy and skill, encouraging them to change their behavior as they become subjects of their own intellectual development.¹⁵

On the home tab, it is possible to view all the available topics by means of the top bar and also through the icons at the bottom. As indicated, methodological rigor must be prioritized when thinking about developing a website, as the content made available to the population must be provided in an appropriate and accessible way.¹⁶

The website covers topics such as breast anatomy, breastfeeding hormones, milk descent, types of nipples, correct latch, positioning to breastfeed, problems during breastfeeding, accessories most used by women, milk bank and current events such as the new coronavirus. The choice of

these topics is in line with what has been written in the literature as the main information needs on the theme, as well as from the authors' professional experience.

In relation to the mean duration of the visits to the website, it was 02 minutes and 54 seconds. This value shows the time that the visitor spent on the website. A research study shows that people are currently online for nearly 6 hours and 43 minutes a day.¹⁷ In view of the results of this study, the time spent on the site was considered small.

As for access to the website, it was observed that women (67%) were those who accessed the most. However, men also accessed the website (33%), showing a change in their attitude. The partner's participation in the breastfeeding process still needs to be fostered and encouraged. The support provided to the woman during the breastfeeding period by the partner is of fundamental importance for the success of the practice. This is due to the fact that the father's emotional support is seen as a protective factor for women in the pregnancy-puerperal period, helping them to face the challenges related to the emotional, physiological and social changes.¹⁸ However, it can be seen that men are taking greater interest in the topic addressed, whether to offer more qualified assistance to their partner or to take care of the baby.

Regarding the readers' age, it was evident that most of the people who accessed the website are in the most fertile age group. This shows the greater interest of this audience in finding out about breastfeeding issues.

The type of device most frequently used to access the website was the cell phone. A research study shows that the use of cell phones in Brazil is on the rise, being the most popular means to access the Internet in the country. In 2019, cell phones were the devices most frequently used by people with Internet access. Between 2017 and 2018, there was an increase in the number of individuals who accessed the Internet via their cell phones (it rose from 97% to 98.1%). Due to this growing use of cell phones in recent years, other types of equipment are no longer being used. Computer use dropped from 56.6% to 50.7% and that of tablets was reduced from 14.3% to 12% in

the same period.¹⁹

Dissemination took place through the University's social media pages, the Nursing Council (COREN-RS) and private instant messaging platforms. According to the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE), there is a high number of people who have access to the Internet and use the network for communication via text messages, voice messages, video and image viewing.²⁰

The growing search for knowledge through digital media, such as websites, social media and applications, is evident. These platforms enable immediate and updated access to quality information related to education in health. Thus, information technologies include women, their support network and health professionals in the construction of the teaching-learning process.²¹⁻²²

The product of the professional master's degree in Nursing was completed in accordance with the proposed objective and method. The limitations of the research were the time for monitoring the website, the low number of accesses and the validation of the website by users and specialists in the area. In this context, new studies are suggested to evaluate and validate the use of websites in health education.

The contributions to the area of Nursing and Health Education include the creation of a website that provided access to quality information on breastfeeding for people who are breastfeeding and interested in the topic.

Conclusion

Health technologies are an important learning instrument that constitutes a source of rapid and wide dissemination of information. There is a need to offer people who are breastfeeding and interested in the topic an information source with updated and quality guidelines. Therefore, the website was created and based on the best scientific evidence, in a systematic and logically organized way, in order to facilitate navigation and location of the contents.

More and more people have quick access to the Internet, so the creation of websites aims at providing knowledge and guidelines in an accessible, easy and reliable way for a better understanding of the breastfeeding process. It is recommended that this study be continued with the validation of the website by specialists in the area and, in addition to that, the assessment of the impact on the process of providing information and developing knowledge by the website users. It is expected that, with greater dissemination of this work, new health education initiatives may emerge through the Internet, as they come to complement and enrich the actions carried out in person.

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Scientific Editor in Chief: Cristiane Cardoso de Paula
Associate Editor: Aline Cammarano Ribeiro

Corresponding author

Myrcea Nunes Dellalibera

E-mail: myrcea.dellalibera@gmail.com

Address: Rua Oito de Julho, 95 Porto Alegre-RS. CEP: 90690-240

Authorship Contributions

1 – Myrcea Nunes Dellalibera

Conception or design of the study/research, data analysis and/or interpretation, final review with critical and intellectual participation in the manuscript.

2 – Débora Fernandes Coelho

Data analysis and/or interpretation, final review with critical and intellectual participation in the manuscript.

How to cite this article

Dellalibera MN, Coelho DF. Breastfeeding: use of information technology as a strategy for the creation of a website. Rev. Enferm. UFSM. 2021 [Accessed on: Year Month Day]; vol.11 e55: 1-13. DOI: <https://doi.org/10.5902/2179769264034>