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A full scope web accessibility evaluation procedure proposal based on Iberian eHealth accessibility compliance

José Martins*, Ramiro Gonçalves, Frederico Branco

University of Trás-os-Montes e Alto Douro, INESC TEC and UTAD, Vila Real, Portugal

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ABSTRACT

Internet is becoming one of the most adopted technologies of all times and one of its particular uses concerns the public health issues. The search for health related information and the exchange of experiences and opinions on symptoms and treatments is one of the main activities associated with eHealth websites, hence the need for these websites to be accessible to everybody, including those with some sort of disability. Nevertheless, when assessing the level of the WCAG 2.0 compliance of Iberian eHealth websites, the results achieved during a two stage, one year apart, evaluation indicated that these websites were definitely not accessible. By adding this finding to other similar results achieved by means of similar researches we believe that a new full scope Web accessibility and usability evaluation procedure was needed and is now presented. The referred proposal aims at creating a basis for both organisations and Web developers to understand how to perform an adequate assessment of their websites.

1. Introduction

As Internet becomes a common detail of citizens' everyday life, it also aggregates some of their necessities and wishes. One of the most relevant issues for the majority of the population is their health and the maintenance of a considerable degree of quality in their lives. The convergence of the two arguments has led to a shift in the search for health-related information that resulted on users focusing their attention on the Internet as one of the main repositories for that type of knowledge. The figures behind this evolution indicate that for more than 75% of the Europeans (EC., 2014) and over 65% of all the United States adults (PRC, 2013) this fact is true. This can be extremely significant and act as an indicator that the existing online health information (eHealth) should constantly be of high quality, easy to access and simple to understand.

According to Kelly, Ziebland, and Jenkinson (2015) and Naoui and Zaiem (2015), the current websites and Web platforms that publish health related information are no longer just information repositories. These are used as places where users share experiences, find support and advice for their issues. Hence the need for both Web developers and health professionals to not only understand the impact the health related content might have on the life of users, but also to acknowledge the need for the referred content to be usable and accessible to all the users, including those with some sort of disability (Klein, Bolfing, & Riesch, 2014).

Despite both the relevance of “eHealth” and “Web accessibility & usability” topics and associated scientific literature, as far as we know there isn't an in-depth analysis to the eHealth websites accessibility compliance levels, particularly one that allows to perceive its timeline evolution. The same fault exists when analysing the existing literature on methodologies or full scope procedures proposals that indicate how to perform an adequate Web accessibility and usability assessment (Martins et al., 2015; Martins et al., 2016).

The goal of the present research has been to analyse the Iberian eHealth websites in order to assess their levels of compliance with accessibility and usability guidelines and standards. This perspective has allowed a characterisation on how accessible is health information to citizens from both Portugal and Spain. Besides this goal, the research also has aimed on reaching a proposal for a full scope Web accessibility and usability evaluation procedure that includes both automatic and manual activities.

The manuscript is organised in five sections, starting from an over-the-top characterisation of the research project scope. The

* Corresponding author.
E-mail addresses: jmartins@utad.pt (J. Martins), ramiro@utad.pt (R. Gonçalves), fbranco@utad.pt (F. Branco).

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2nd section introduces a theoretical characterisation of all the concepts associated with the project. A characterisation of the Iberian eHealth websites timeline evaluation is presented in section 3 and followed by the proposal for a full scope Web accessibility and usability evaluation procedure. The manuscript is concluded with a Conclusions section.

2. The conceptual framework

2.1. eHealth services

As organisations immerse themselves in the existing Digital Society, the public availability of a corporate website tends to become a place where one cannot only perceive information directly related to the organisations' core, but also related to the organisations' field of activity (Á. Rocha, 2012). From a more commercial perspective, a corporate website can be considered to be the first interaction point between an organisation and its customers, thus the need to develop high quality websites and inherent content (Leite, Gonçalves, Teixeira, & Rocha, 2014). According to Hwang, McMillan, and Lee (2003), when a corporation assumes a public online presence this should represent a strategic approach directed at communicating with their audiences, spreading their corporate image and, in parallel, displaying their services. This same argument is defended by Hakim and Deswindi (2015) when arguing that health care institutions websites are extremely important as a strategic tool for diminishing the distance that, so many times, exists between themselves and their customers/patients.

In a society eager for information, Internet users (patients) tend to create expectations regarding the access to eHealth (Eysenbach, 2001), that in this case can be translated in the desire to access high quality health information, better health expertise and medical services, cutting-edge treatments and health related support given in a more personalised manner (Domenichiello, 2015). From a business standpoint, the referred websites will increase the institutions' chances of being caught during their users raid of Internet search, hence extrapolating their chances on seizing new potential customers and triggering their existing customers' loyalty.

When analysing patients health care websites usage patterns, one can easily acknowledge that they are gaining abilities and needs towards understanding not only how to identify certain symptoms associated with some health issues, but also to understand what their chosen hospital can offer in terms of services and available experts (Huang, Liu, & Wang, 2014). In the same line, and considering the research of de Haydu, Eleswarapu, Dabaja, and Duke (2015), eHealth platforms, particularly those directly supported by health care institutions, should serve as a repository for trustworthy health information that might be of some interest to patients. Nevertheless, there are still several institutions which continue to implement policies only directed at delivering a good medical service to the public, diminishing the attention given to create and provide useful and accurate health information, and allowing all citizens (including those with some sort of disability), to receive some initial diagnosis and have their doubts cleared (Raji, Mahmud, Tap, & Abubakar, 2014). A straightforward engagement of both patients and their families to health related information and Web based systems will act as an element which will help at increasing the overall health care services performance, but also at establishing better and more solid relationships between medical experts and patients (Ralston et al., 2007).

Lin, Wittevrongel, Moore, Beaty, and Ross (2005) and Schenker and London (2015) argue that the availability of a website that provides insights on the quality ratings of a given hospital, its treatment policies, specialties and protocols, and its patients' decision aid mechanisms, will have a very significant impact on the patients' decisions towards seeking care or undergo a certain medical procedure. Thus, complying also with Raji et al. (2014), in order to be useful to their patients, hospitals' websites should adopt an easy to use, aesthetically attractive and, most of all, rich and accurate direct health care information.

With the above in mind, the requirement for a hospital website to be able to attract patients and allow them to search for health information, track their health record, make appointments and communicate with health services providers, it is clear that the referred websites must be easy to use and accessible to all (Robeznieks, 2011; Snyder, Ornes, & Paulson, 2014).

The importance of high quality hospital websites, ease of use and accessibility has been in the agenda of several authors and organisations, who argue that, despite the notorious efforts in bringing the institutions to the Web, there is still a long way to go in order for the referred websites to be easily usable and accessed by everybody (Noh, Jeong, You, Moon, & Kang, 2015; Silvestre, Tomlinson-Hansen, Fosnot, & Taylor, 2014; Snyder et al., 2014; UN., 2014).

2.2. Accessible websites

As the current number of European citizens with some sort of disability reaches the 80 million mark, the European Union Agency for Fundamental Rights publicly highlights the need to be granted the same rights to both disabled and non-disabled citizens in what concerns integration within society, and the use of any product or service. This effort of equality should be even more considerable when perceiving all available ICT supported content, including the one that is only available online (FRA., 2015). Information and communication technologies are even more important when we analyse them as tools that give active support to users with functional limitations, hence allowing them a more complete society integration (Sánchez-Gordón & Moreno, 2014). Even though the importance of having a universal ICT, and its inherent return in terms of life quality and integration is acknowledged, this will only be a reality when these technologies become accessible to all users, no matter of their disabilities or impairments (Gonçalves, Martins, Branco, & Barroso, 2013; Wenner, 2008).

The Web, probably the most relevant ICT available to users, holds a role of extreme importance to both individuals and organisations, mainly because it allows the simple and linear establishment of virtual connections with positive return to both scopes (Sigala & Chalkiti, 2014). Hence, the existence of criteria that support a universal access to the Web represents a clear necessity and the reasoning behind the Web accessibility concept.

As Fernandes, Costa, Duarte, and Carriço (2012) argue, a more accessible Web means that it can be used by all the users regardless of their limitations. This concept requests the absence of barriers that limit the users' interaction with the existing content, thus the mindset of a website which “excludes” users cannot be considered accessible. The ability of a given Web content to be accessible to all the users, including those with some sort of disability, is the exact conceptualisation of Web accessibility (Hong, Trimi, Kim, & Hyun, 2015; Li, Yen, Lu, & Lin, 2012b).

From a broad perspective, for a website to be considered accessible it must comply with existing regulations and guidelines. The World Wide Web Consortium (W3C), besides being considered one of the most relevant institutions in what concerns the Web related issues, has created a set of Web accessibility guidelines designed to help Web content developers to produce accessible content (Lazar, Dudley-Sponaugle, & Greenidge, 2004). According to the referred guidelines, all Web content must be entirely

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