

MONITORAMENTO DA SAÚDE E PROTEÇÃO DO USUÁRIO

HEALTH MONITORING AND USER PROTECTION

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Resumo: O objetivo do presente estudo é analisar aplicativos classificados na categoria de saúde e identificar como eles manipulam a avaliação, prescrição e monitoramento da atividade física dos usuários. O crescimento exponencial das tecnologias interativas traz um olhar diferenciado quando a utilização de serviços presentes em dispositivos móveis instalados nos smartphones como software para as mais diversas atividades. A área da saúde vem se apresentando como um setor promissor para o uso de aplicativos de monitoramento de atividades físicas. Essa é uma pesquisa descritiva com abordagem qualitativa utilizando método de estudo de caso. As considerações apontam para a dificuldade em avaliar os aplicativos direcionados ao gerenciamento de atividades físicas, principalmente quanto a avaliação versus usuário. Também existe uma lacuna quanto a autorização legal da categoria profissional e seu conselho, neste caso a área da educação física. Outro ponto levantado aqui é sobre a responsabilidade compartilhada quanto às prescrições recomendadas aos usuários. Este tema remete à compreensão da proteção ao usuário que faz uso desses serviços.

Palavras-chave: Usuário. Saúde. Aplicativos. Atividades Físicas.

Abstract: The aim of this study is to analyze applications classified in the health category and identify how they manipulate the evaluation, prescription, and monitoring of users' physical activity. The exponential growth of interactive technologies provides a unique perspective on the utilization of services available on mobile devices installed on smartphones, functioning as software for a variety of activities. The health sector has emerged as a promising area for the use of applications that monitor physical activities. This is a descriptive research study with a qualitative approach utilizing a case study method. The findings indicate challenges in evaluating applications aimed at managing physical activities, particularly regarding user evaluation. There is also a gap concerning the legal authorization of the professional category and its regulatory body, particularly in the field of physical education. Another point raised is the shared responsibility regarding the recommendations prescribed to users. This topic relates to the understanding of user protection for those utilizing these services.

Keywords: User. Health. Applications. Physical Activities.

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Introduction

There is an exponential growth in the use of mobile devices around the world. It is believed that interactive technology features enhance communication through electronic devices such as mobile phones, laptops, tablets, and computers connected to the Internet. These technologies bring many benefits and the potential to facilitate access to information and organize processes and activities for individuals on a daily basis.

There is a wide range of health-related smartphone apps available. Research shows that for more advanced applications, assessments go beyond content analysis or user satisfaction, which is typically measured on a scale of 1 to 5 and represented by stars (Bindhim; Hawkey; Trevena, 2015). Additionally, it is important to consider other relevant information, especially when linked to health management.

The utilization of technologies for health monitoring is one of the practices endorsed by the World Health Organization (WHO). eHealth (or mobile health) encompasses various services, including voice calls, text messaging, patient monitoring, and the manipulation of data from other devices through mobile technologies (WHO, 2011). Numerous studies have highlighted the potential of digital platforms for treating certain diseases, as these technologies have significant penetration among populations (Ben-Zeev et al., 2013).

Today, there are thousands of apps available that include various indicators and are classified as fitness applications on platforms such as the Apple Store and Google Play, the latter being particularly popular in the market. Many users choose applications based on perceived design quality and ease of use. Scientific research has increasingly focused on analyzing the usability and functionality of these apps, further confirming the need for additional studies (Bardus, 2016).

The number of health-related applications available for smartphones is diverse. This growth trend underscores the difficulty for users and health professionals to identify and evaluate the quality of available services (Tibes, Dias, Zem-Mascarenhas, 2014; Stoyanov, 2015).

Most processes within these applications are registered but not patented. This study aims to demonstrate that patenting these processes is essential for providing protection to users. The availability and utilization of services create a “shared responsibility” between the parties involved – developers, inventors and users. Shared responsibility is a concept that posits that both developers/inventors and users share accountability for the utilization of these processes (BRASIL, 1998a; BRASIL, 1990b; Nunes, 2017).

This article addresses the scientific problem of whether applications can genuinely “promise” prescription/management in the health sector. Consequently, this study aims to analyze applications classified within the health category and identify how they manipulate the evaluation, prescription, and management of users’ physical activity.

Methodology

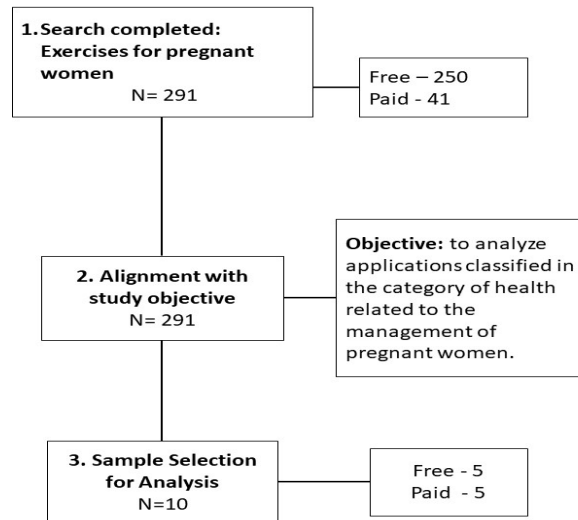
This is a descriptive research study with a qualitative approach (Chizzotti, 2003), aimed at gaining a direct understanding of the studied situation using a case study method, as it seeks to conduct a detailed analysis of a specific context (Ventura, 2007).7).

The research was divided into three steps. The first step involved searching the Play Store platform using the phrase ‘exercises for pregnant women’. Based on the number of applications available on the platform, inclusion criteria were established: only those rated between 4 and 5 stars by users were considered. A sample of 10 applications was selected, consisting of 5 paid applications and 5 free applications.

The second step involved defining the exclusion criteria. Applications that were excluded were those that: (1) received user ratings below 4, and (2) did not present goals related to pregnant women. The included applications were organized into a spreadsheet highlighting their classification, category, description, and relevant information. This organization allowed for better visualization of

the data. The sample selection process for analyzing the applications can be summarized in Figure 1.

Figure 1. Steps for sample selection



Source: Search Data, 2019.

Ultimately, all content: texts, images and videos of the application were analyzed in a particular, in view of, the goal of the application proposal, that is, what problem is it trying to solve, the information available to users, and the description is about the security and protection to the user, it was also analyzed the existence of gamification elements used to change the behavior of use. Ultimately, all content - including texts, images, and videos of the application - was analyzed with a focus on the application's objectives. Specifically, this analysis considered what problem the application is trying to solve, the information available to users, and the description regarding security and user protection. Additionally, the existence of gamification elements used to influence user behavior was also examined.

Results and Discussion

During pregnancy, women undergo various transformations. These modifications encompass hormonal, musculoskeletal, cardiovascular, respiratory, and psychological changes. It is well-known that eating and exercising are important in every phase of life. In addition to basic activities such as walking, sitting, climbing, descending, and running, engaging in structured exercise is vital, as it improves individuals' health. Therefore, exercising beyond established limits and without professional support may present risks (Castro et al., 2009).

A structural analysis generally reveals that the selected sample of applications aims to facilitate exercise and dietary care for pregnant women. The applications employ persuasive communication strategies intended to promote behavior change (Spahn, 2012). Approximately 50% of the analyzed applications focus on physical exercise, while others concentrate on nutrition and the dissemination of essential information for women during this period.

Mobility is the primary functionality of smartphones. As pocket computers, they are available to accompany users 24 hours a day, wherever they might be. The processes available on mobile devices are increasingly common, empowering services that encourage users to engage more with aspects related to their own health (Tibes, Dias, Zem-Mascarenhas, 2014).

There is a wide array of applications associated with health care, in addition to fitness

and diet (Krebs, Duncan, 2015). According to these authors, this category incorporates other applications such as prevention, lifestyle monitoring, self-diagnosis, provider directories, diagnosis, education, and treatment compliance. This field is expanding, although it faces several limitations in both the sophistication of the applications and the understanding of consumer profiles. “Most health applications were not designed with input from health professionals and behavior change,” the authors Krebs and Duncan argue (2015, p. 2). This emphasizes the importance of information so that users can effectively utilize the services available.

The applications can promote wellness as well as physical, psychological, and emotional growth. These activities may involve transferring data and information. However, there is an inherent challenge regarding privacy, storage, and monitoring of this information. An example of this is the use of notification actions to relay information to users. Notifications must never request personal information such as age, phone number, email addresses, logins, or passwords. Data of this nature can compromise a user’s privacy (Jones, Moffitt, 2016).

User Protection

To analyze the variables related to user protection present in the article’s objective - specifically, the evaluation, prescription, and monitoring of users’ physical activity - a summary frame containing the main information extracted from the applications is presented, as shown in Table 1.

Table 1. Summary of variables present in app descriptions

ANALYZED VARIABLES	PAID APPLICATIONS	FREE APPLICATIONS
EVALUATION	In both paid and free applications, it is difficult to identify any concern for evaluating the physical activities presented in the application interface. Approximately 2% of the applications alert users about the importance of monitoring certain symptoms and the need to consult a doctor.	
PRESCRIPTION	In this category of applications, prescriptions are provided with basic information about the exercise process. Guidance for performing the exercises is delivered through videos and illustrations, emphasizing the importance of executing exercises correctly. The applications also specify the care needed and the duration for each exercise.	In the free applications, the basic information regarding exercises is more informative about the functionalities of the application than about the execution of the exercises. There is no information regarding the precautions that users should take when performing the exercises, nor is there any information about the duration or time allocated for the activities.
MONITORING	It is presented more systematically through visual content, including the creation of profiles. This includes routine creation, monitoring of progression levels, and providing weekly and monthly exercise duration, along with nutrition information.	There is a greater amount of information focused on user education concerning exercise. However, the applications do not clearly specify how they manage, monitor, and track the progress of the exercises.

Source: Search Data (2019).

The importance of evaluating physical activity aligns with the practice of physical activity. For this evaluation to take place, it is essential to use accurate and appropriate instruments to measure and assess the level of activity. When assessing physical activity, factors such as frequency, intensity, and duration must be considered, along with the type of modality or activity performed.

It should be understood that a measuring instrument may evaluate one aspect while overlooking others, particularly data such as the intensity of physical activity. Another important consideration is age; the assessment method should vary based on the age group (Cafruni; Valadão; Mello, 2012; Marques; André, 2014).

While performing physical activity is important, proper prescription is even more crucial. An appropriate prescription for physical activity includes variables such as duration, intensity, and frequency. Careful consideration should always be given to the combination of exercises, ensuring gradual progression, appropriate intensity, and attention to fatigue (Carvalho et al., 1996).

Monitoring refers to the act of organizing, planning, and executing activities that facilitate the work process (Campos, 2004). A service delivered as an application serves as a tool for accessing information from both the application itself and its users. Effective monitoring requires attention not only to the transmission of information to users but also to the management of technical aspects.

The quality of the service provided by the applications can be analyzed in terms of its technical and technological features: innovation, design, usability, programming language, among others. However, aspects that enhance human activity - such as subjectivity, personal experiences, cognition, emotional state, and health - are often not considered, regardless of whether the applications are paid or free. This generates a gap in user protection for those utilizing such services.

Shared Responsibility

The relationship of responsibility between the involved parties - software developers, users, and processes - develops through collaboration. Development involves mastering the language and code to transform an abstract idea into a tangible product. The software itself is a product that can be downloaded from access platforms (e.g., Play Store) primarily for problem-solving. The demand for these types of services, particularly software for resolving technical issues, continues to grow (Crespo et al., 2004).

Shared responsibility helps to understand the new relationships between users and processes. Both the inventor and the user share responsibilities in the utilization of processes present in applications. However, the issue is that these services are often registered but not patented (Moraes, 2003; Silva, 2015; Bittar, 2017). This study posits that patenting the processes within these services will enhance protection not only for the inventor but also for the user, especially in cases where the user suffers damage (Silva et al., 2000; Monte; de Bortoli; Lucena, 2018).

Considering shared responsibility and the development of devices that promote modifications in human behavior means acknowledging the care required for users of these services. This study underscores the pressing need for professional oversight in this area. Of the applications analyzed, only one demonstrated the involvement of a professional (Get BODIED by J - Health & Fitness), credited to professional instructor Jenelle Butler (information available within the application).

The term "lack of legal authorization" (Vaz, 2011) refers to individuals who are not authorized to practice a specific profession for which they lack the necessary qualifications. In some professions, such as physical education, if an individual possesses a degree (bachelor's) but is not duly registered with the Federal Council of Physical Education and the Regional Councils of Physical Education, they are not legally permitted to practice (Fabiani, 2009; Confef, 2010).

According to the Federal Council of Physical Education (Confef, 2010), Chapter II outlines the field and activities of physical educators as follows:

[...] coordinate, plan, schedule, prescribe, supervise, direct, organize, guide, teach, administer, implement, analyze, evaluate, and execute works, programs, plans, and projects. This includes providing audit services, consulting, and assistance, as well as developing specialized training and serving multidisciplinary and interdisciplinary teams in informative, scientific, and pedagogical activities related to physical, sports, and similar activities.

The description provided by the Federal Council of Physical Education (Confef, 2010) clearly indicates that physical education professionals in Brazil are responsible for processes related to activities involving bodily health. Therefore, there is a need for a more detailed assessment of the safety of the prescriptions made by such applications, as well as the responsibilities concerning user protection, since most of these applications are developed by professionals in the field of physical education (Bardus et al., 2016).

The exchange of information and communication facilitated by mobile technologies linked to health has been gaining increasing prominence. These devices offer accessible solutions for nearly all possible requirements related to this field. Research estimates that there are more than 3,000,000 free downloads and 300,000 paid downloads of mobile health applications in the United States of America (Yasini; Marchand, 2015).

The risks associated with the development of these applications arise from the processes that demand engagement and utilize persuasive language to encourage behavioral change among users (Spahn, 2012). In other words, the technology is designed to guide users toward behavior modification (Hamari; Koivisto; Pakkanen, 2014).

Final Considerations

Every day, new platforms are created that allow people to establish health communication processes with their doctors, caregivers, or any other type of health professional. These services utilize clear and objective language, primarily serving as “health monitoring”. The analysis of the selected sample of health applications specifically related to monitoring the physical activity of pregnant women highlights some important points.

The development of mobile applications for healthcare services is on the rise. Through analysis, it is possible to perceive the architecture of the information within the applications, revealing several trends, such as targeted communication directed at the defined audience, feedback through notifications, and resource efforts aimed at promoting behavior change.

Therefore, although there is a policy for developers to make applications available on platforms (Apple Store and Play Store), there are no formal guidelines addressing professional complications regarding shared responsibility and the lack of legal authorization for these types of services. This study suggests that one way to protect users is through the patentability of the processes involved.

The variables analyzed concerning the evaluation of exercises, prescription, and monitoring indicate a concern for users. Key considerations include: (a) the importance of assessment for each individual, taking their characteristics into account; (b) the protection of user information; (c) the necessity of having a qualified professional to prescribe exercises; and (d) the need for guidance and care for users in the event of any problems.

Brazil is one of the leading countries in adopting services available via smartphones. Recent research shows that the number of mobile devices exceeds the number of inhabitants. The use of applications is virtually inevitable and will continue to grow within this field. Based on this information, the contribution of this research to issues related to user protection and the care associated with services and processes accessed through mobile applications is evident.

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Recebido em 20 de Agosto 2024.

Aceito em 23 de setembro 2024.