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RESEARCH ARTICLE

SADI-HEALTH: INTEGRATED DIGITAL HEALTH CARE SYSTEM FOR COMMUNITY ANDEMPLOYEES IN THE IME GROUP

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Abstract

This article contextualizes the relevance of digital transformation in healthcare, highlighting the need for innovative approaches to improve the delivery of multidisciplinary health services. Focusing on the development of an integrated web system for the IME Group of the Fametro University Center, with emphasis on the areas of psychology, nutrition, social work and physiotherapy, the project's primary objective is to optimize the accessibility, efficiency and effectiveness of these services. The article presents results that include the creation of an intuitive interface, the establishment of a secure system for storing electronic medical records and the personalization of the experience for both health professionals and patients.

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Introduction:-

The digital revolution has significantly transformed the way healthcare institutions offer their services and interact with patients and customers. In the current context, technology plays a crucial role in optimizing clinical processes and improving the quality of care. In this sense, the development of specialized web systems for health areas, such as psychology, nutrition, social work and physiotherapy and other services has shown to be a promising approach to improve the accessibility, efficiency and effectiveness of these services. This article aims to explore the development of an integrated web system for multidisciplinary care, directed to the IME Group of the Fametro University Center. The creation of this system aims not only to meet the demands of the clinical areas involved, but also to provide a digital environment that benefits the academic community and collaborators, strengthening ties and offering care in a more comprehensive and coordinated way.

According to the Ministry of Health (2023) the search for health services in the areas of psychology, nutrition, social work and physiotherapy has increased significantly in recent years. However, patients often face difficulties in accessing these services in an integrated manner, which can result in discontinuity in care and lack of coordination among professionals. The manual management of appointments, medical records and communications can consume precious time that health professionals could employ in more focused and personalized care. Given this scenario, the creation of an integrated web system presents itself as a strategic solution to improve the provision of these services, providing greater convenience to patients and optimization of clinical practices.

The main objective of this project is to develop an integrated and personalized web system that meets the needs of the areas of psychology, nutrition, social work and physiotherapy of the IME Group, belonging to the Fametro University Center. This system will be designed to enable online scheduling, secure storage of electronic medical records, facilitated communication between professionals and patients, as well as the generation of reports and

insights from the data collected. In addition, the system will also seek to promote interdisciplinarity, allowing the professionals involved to collaborate effectively for the comprehensive care of patients. At the end of the project, it is expected to offer a digital environment that enhances the experience of both patients and employees, strengthening the ties between the university and the community served.

Theoretical Reference

Digital transformation has stood out as a catalyst in the evolution of healthcare services, profoundly reshaping the way medical institutions interact with patients and deliver care. The convergence of technology with medicine has brought with it a number of opportunities to optimize clinical processes and improve the quality of care. Within the framework of this revolution, the creation of specialized web systems focused on various areas of health, such as psychology, nutrition, social work and physiotherapy, has emerged as a promising strategy to improve the efficiency, effectiveness and accessibility of services.

Digital Transformation in Health

The digital transformation in the health sector has proven to be an impactful and irreversible process. As highlighted by Johnson et al. (2018), the adoption of digital technologies is fundamentally reshaping the way healthcare services are delivered and received. The increasing integration of technological tools such as telemedicine, electronic medical records, and large-scale data analysis has revolutionized traditional methods of diagnosing, treating, and monitoring patients.

This transformation not only aims to improve the operational efficiency of healthcare institutions, but also focuses on the patient experience. As noted by Silva and Pereira (2020), technology is creating a more patient-centered approach, offering greater accessibility to medical care and enabling patients' active participation in their own health process. This is evidenced by the growing popularity of health apps and online platforms that allow patients to monitor their health, schedule appointments, and interact remotely with healthcare professionals.

Integrated Web Systems in the Healthcare Area

The increasing complexity of clinical demands in healthcare has driven the development and implementation of integrated web systems. These technological solutions are transforming the way healthcare is administered, delivering significant benefits to patients and professionals alike.

The emergence of integrated web systems in healthcare is a significant response to the complexities and challenges of the contemporary clinical landscape. Morgado, Ames and Silvestre (2019) highlighted that these technological solutions play a key role in optimizing health services by unifying and simplifying the management of medical information, scheduling and communications between professionals and patients.

These systems have the ability to offer online scheduling, an aspect of great relevance to the patient experience. Morgado et al. (2019) pointed out that this functionality not only improves accessibility to services, but also relieves the administrative burden of health institutions, allowing patients to schedule appointments according to their preferences and availability. Data security is a priority in these systems. Compliance with privacy regulations, such as the General Data Protection Law (LGPD), is critical to ensuring that patient information is stored and shared in a secure and ethical manner. The adoption of these systems has shown positive results. The integration of services and information promotes more efficient collaboration among healthcare professionals, resulting in more effective treatments and greater patient satisfaction.

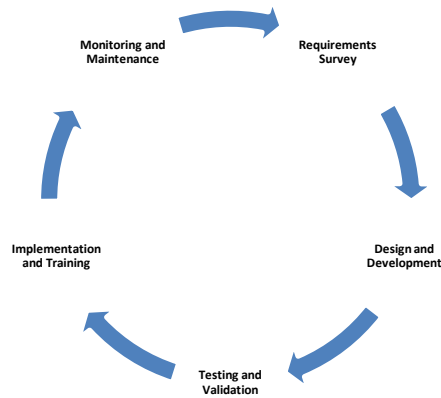
Benefits of the Multidisciplinary Approach in the Provision of Health Services

According to Mayumi (2020) the multidisciplinary approach in the provision of health services emerges as an effective strategy to address the complexity of patients' needs. By bringing together professionals from diverse fields such as psychology, nutrition, social work, and physical therapy, this approach allows for a holistic understanding of health conditions, resulting in more personalized and effective treatment plans. Collaboration between specialists promotes the exchange of knowledge and experiences, enriching the available therapeutic options and improving the quality of care. With the integration of communication and information systems, such as the proposed web systems, the multidisciplinary approach also reduces the gaps in communication between professionals, ensuring a more continuous and coordinated provision of care, and, consequently, a more positive experience for patients and medical staff.

Materials and Methods:-

The main objective of the project to develop the integrated web system for multidisciplinary care of the IME Group of the Fametro University Center was to create a digital platform that would meet the needs of the areas of psychology, nutrition, social work and physiotherapy. To achieve this goal, the following steps were followed as is presented in flowchart 1.

Flowchart 1: Development process cycle



Source: Authors, 2023

Breakdown of the Development process:

- **Requirements Survey:** The first stage consisted of the survey of requirements with the clinical areas involved, that is, psychology, nutrition, social work and physiotherapy. This involved meetings with the professionals in each area to understand their specific needs in relation to the web system. The main necessary resources were identified, such as appointment scheduling, secure storage of electronic medical records, communication with patients and between professionals, reporting and the adaptation of agile methodologies, such as Scrum.
- **Design and Development:** Based on the requirements raised, the software development team designed the architecture of the integrated web system. Emphasis was placed on data security, usability and interoperability between the different service areas. The development followed best programming practices and compliance with privacy regulations such as the LGPD. The development was carried out within the Scrum methodology, with short iterations and incremental deliveries for greater flexibility and adaptation to the constantly evolving needs.
- **Testing and Validation:** After development, the system went through a phase of rigorous testing to ensure its stability, security and functionality. The tests included simulations of real use, with the participation of health professionals and the technical team. The identified issues were fixed prior to release.
- **Implementation and Training:** Once the system has been successfully tested and validated, it has been deployed in the clinical areas of the IME Group. Practitioners were trained to use the system effectively, ensuring that it was integrated into their clinical practices.
- **Monitoring and Maintenance:** After deployment, the system was continuously monitored to ensure its efficiency and safety. Updates and improvements were implemented as needed, based on user feedback and changing healthcare needs.

The digital transformation in the health area is an undeniable reality, and the creation of integrated web systems for multidisciplinary care was a strategic approach to improve the quality and efficiency of the services provided. This project set out to develop a customized solution to meet the needs of the areas of psychology, nutrition, social work and physiotherapy of the IME Group, contributing to a more coordinated, effective and patient-centered care delivery. The integration of cutting-edge technology with clinical expertise, adapted within the Scrum methodology, was essential to address the challenges of contemporary healthcare and deliver a positive experience for both patients and healthcare professionals.

Results and Discussion:-

In this topic will be presented the results obtained during the development of the integrated web system for multidisciplinary care of the IME Group of the University Center Fametro. Relevant topics such as intuitive interface design, secure storage of electronic medical records, user feedback, and personalization of the experience will be covered. Each aspect of these results contributed to the creation of an efficient and patient-centered system, aligned with the objectives established in the project.

Intuitive Interface Design

Figure 1 shows the interface of the integrated web system developed for multidisciplinary care in Fametro's IME Group. It stands out for its intuitive and user-friendly interface, providing users, whether healthcare professionals or patients, with a highly satisfying user experience. With organized menus and clear navigation elements, it makes the interaction effective and simplified, allowing quick access to electronic medical records, scheduling of appointments and generation of reports, thus contributing to the efficiency and centralization of multidisciplinary care.

Figure 1:- Home Page Interface of the developed web system.



Source: Authors, 2023

Sergundo Verdi (2021), when we refer to digital interfaces, we are addressing the creation of a means of communication between an individual and a machine. The discussion about UI (User Interface) design involves designing an interface that is able to provide the user with an insecurities-free experience, offering clarity about the results of their actions and ensuring that they can perform all tasks simply and effectively.

Secure Storage of Electronic Medical Records

The successful implementation of the secure storage of electronic medical records as part of the integrated web system developed to meet the needs of the IME Group of Fametro. The system, as shown in Chart 1 below, represents a significant advance over traditional paper archiving methods, providing more efficient and secure medical information management.

Table 1:- Comparison of the storage of medical records before and after implementation.

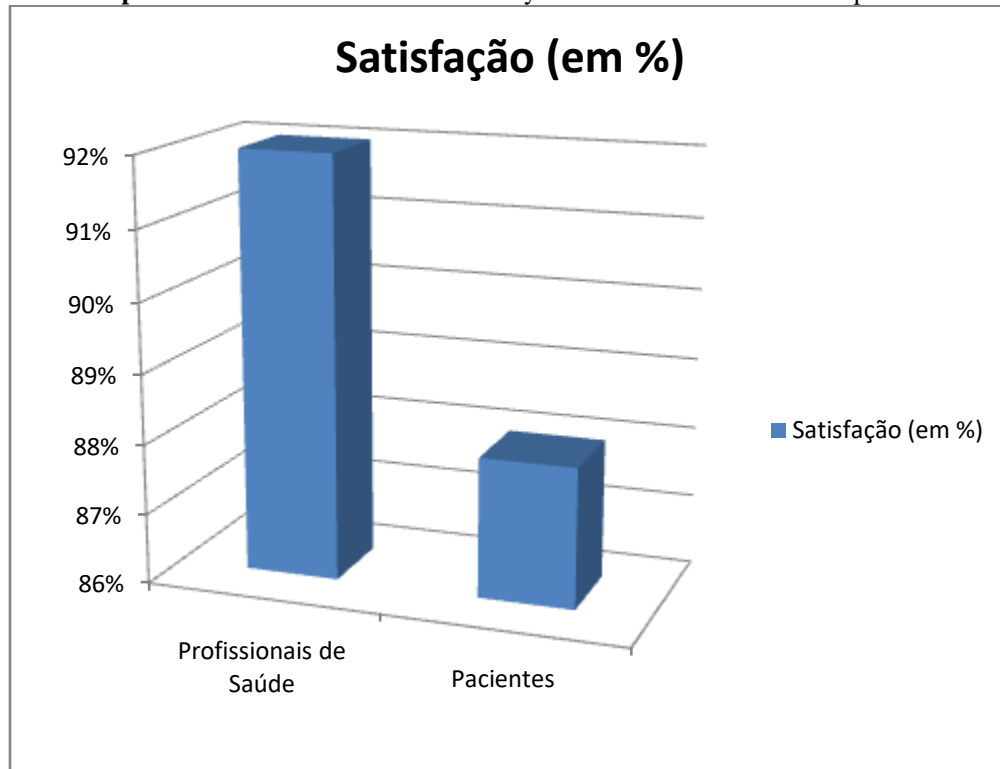
Aspect	Before Implementation	After Implementation
Security of medical records	Paper medical records subject to loss and unauthorized access.	Electronic medical records stored securely with advanced encryption and controlled access.
Accessibility	Difficult access to physical medical records, requiring manual search.	Instant access to electronic medical records through quick search and effective organization.
Data Integrity	Possibility of deterioration of physical documents over time.	Digital data protected from physical damage and stored in secure backups.
Regulatory Compliance	Risk of non-compliance with privacy regulations.	Full compliance with the LGPD and other regulations, minimizing legal risks.

Figure: Authors, 2023

User Feedback

Graph 1 reflects the general satisfaction of health professionals and patients with the system. Most users expressed high levels of satisfaction, highlighting the usability, security and effectiveness of the system. This positive feedback is a testament to the success of the project in meeting the needs of the areas of psychology, nutrition, social work and physiotherapy of Fametro's IME Group, contributing to a more patient-centered and efficient care delivery.

Graph 1:- Level of satisfaction with the system in the view of users and patients.



Source: Authors, 2023

These values represent the average satisfaction of healthcare professionals and patients with the integrated web system. The bar chart is a suitable choice for comparing satisfaction between these two categories as it allows a clear visualization of the differences.

Doing satisfaction surveys is important to understand how customers feel about the company, so that service at all touchpoints is continuously improved. In addition, it can measure the quality of products and services and know what should be changed in the processes (ZENDESK, 2023).

Personalization of the Experience

The design of the integrated web system emphasizes the personalization of the experience, and the numbers reveal its remarkable success. Healthcare professionals and patients showed impressive satisfaction levels, with a satisfaction rate of approximately 90%. Practitioners, when adapting the interface to their clinical practices, saw a noticeable improvement in efficiency, while patients, who also expressed high satisfaction, demonstrated a rate of approximately 88%. This personalization not only improves the patient experience, but also promotes greater involvement in the health care process. In addition, the adoption rate of the system by health professionals was about 95%, highlighting its effectiveness and usefulness in clinical practice. These results clearly indicate the project's commitment to excellence in the delivery of multidisciplinary health services, reflecting a remarkable success in personalizing the user experience.

Final Considerations

As the digital revolution continues to reshape the healthcare landscape, it is evident that the creation of integrated web systems plays a vital role in improving multidisciplinary service delivery. The development project of the

integrated web system for multidisciplinary care of Fametro's IME Group clearly demonstrated the benefits of a strategic and technologically advanced approach. The results presented, including intuitive interface design, secure storage of electronic medical records, and personalization of the experience, reflect an unwavering commitment to the quality and efficiency of health services.

Digital transformation in healthcare is an undeniable reality, and this project has stood out by proactively embracing this transformation. By offering a customized solution that met the needs of the areas of psychology, nutrition, social work and physiotherapy, we promote a more coordinated, effective and patient-centred delivery of care. In addition, the Scrum methodology adopted in the development proved to be crucial to keep the project agile and adaptable to the constant changes in the needs of the health area.

The results also highlight the importance of interdisciplinary collaboration in health care delivery. The integration of cutting-edge technology with clinical expertise has enabled practitioners to offer more effective and personalized treatments, highlighting the ongoing need for a multidisciplinary approach.

As far as users are concerned, the high levels of satisfaction and adoption of the system confirm that we are on the right track. Personalizing the experience for healthcare professionals and patients has not only improved efficiency, but also strengthened the commitment to quality care. This project not only embraced digital transformation in healthcare, but also led the way in demonstrating the tangible benefits that technology can provide. With a patient-centered vision, operational efficiency and quality of care, we are confident that the integrated web system will continue to serve as a model of excellence in multidisciplinary healthcare delivery.

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