Physiotherapy Evaluation Process Optimization

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Abstract *— In the "Centro de Terapia Fisica y Atletica" physiotherapy company, the potential benefits of the electronic health record system have not been fully used for the evaluation process. The process workflow was not adapted to the electronic system method. The system's data entry, format, content, and structure were not logically organized to fully support the process. This scenario limits the number of patients examined in an hour and decreases the effectiveness of the process. As a result, the business has kept up its manual method in printed form. The process was optimized, and the duration of the patient evaluation was decreased using the DMAIC methodology. A customized template was created in the electronic system for the patient examination to address process gaps and replace the manual approach. It was demonstrated that the process efficiency increased with the implementation of the new template, and the time length was reduced by more than 25%. The execution of the template will be monitored through periodic reviews, and any necessary adjustments will be carried out based on post-implementation evaluations.*

Key Terms *— Customized template, Electronic Records, Physical Therapy, Structured Data*

INTRODUCTION

Physiotherapy is a medical specialty that treats, prevents, heals, and adjusts the body's movement-related limitations. Patients' health is improved and prolonged by gradually restoring their physical bodies. The "Centro de Terapia Física y Atlética Nueva Vida P.S.C." is a 2010-founded physiotherapy company. Professionals at the organization provide high-quality treatments that improve people's health through rehabilitation, relief, and patient well-being. It is part of its aim to provide an excellent service to assist and satisfy patients' particular demands in the shortest amount of time feasible while providing exceptional human care.

An area of potential to enhance the patient evaluation process was identified for the physical therapy company. The physical therapy evaluation process has been manual and documented in printed form. After almost four years of operation, the electronic medical records system's potential benefits have not been fully utilized due to various factors.

The patient's physical therapy evaluation method using the electronic system was unsuitable and did not fully match the process. The content lacked the fields for the information required to do the evaluation effectively. The average time for the patient evaluation using the electronic system, including the interview and physical examination, was 1.25 hours per patient. The system was not adapted and structured to the information needed to complete the process effectively according to process requirements. Nevertheless, evaluating the patient using the manual procedure typically takes an average of 0.75 hours. This contributed to the physical therapy company's decision to use the manual method for all these years. This situation restricts the number of patients examined every hour and decreases process efficiency.

This project aimed to reduce the evaluation time per patient using the electronic system by at least 25% by optimizing activities, customized template development, and eliminating waste to raise service productivity and efficiency. To achive this, the physiotherapy company's patient evaluation methods, including traditional and electronic, were analyzed to simplify and optimize the process. Implementing customized templates in the electronic system to replace the traditional manual method reduced the evaluation time and increased process efficiency.

LITERATURE REVIEW

Despite the growing usage of computerized medical records, some physiotherapists still use traditional methods to keep their patients' clinical information on paper. Researchers interested in healthcare results have promoted the adoption of electronic records to increase efficiency and gather various data. A clinical record's primary goal is to capture a patient's condition and any treatment they may have received.

A pilot study compared traditional paper-based and electronic clinical physiotherapy records [1]. When comparing the electronic and paper clinical records' content and completion times, it was found that implementing an electronic system with a uniform data entry format could enhance the precision and thoroughness of clinical records for physical therapy, including record identification [1]. Although there was some initial apprehension about an unfamiliar documentation method, participants found the electronic system to be generally convenient to use and learn. Customization options were preferred by some participants [1].

Accurate information must be accessible to physicians on time and in the appropriate format to make effective therapeutic recommendations. However, they are frequently confronted with a surplus of ambiguous information or lacking data affecting decision-making [2].

When standardizing the information stored in the Electronic Health Record (EHR) system, investigators have emphasized the significance of structured data over free text and characterized data standardization as a key success factor [2].

Other benefits of implementing the electronic system are enhanced reporting, efficiency of operation, communication between departments, data precision, and potential for additional research [2]. It is recommended to consider workflow assessment when developing and implementing systems, involve end users in the development process, allocate resources for training, organize and conduct testing to guarantee performance, and conform to standards [2].

A 2020 study aimed to determine if there has been a change from 2016 in the general public's interest in digital health technologies and how much physicians think these tools will enhance or detract from patient care [3]. The number of physicians considering digital tools to offer a clear benefit has significantly increased [3].

These studies align with the technological and human elements critical to long-term care and effective EHR deployments [2, 4]. Additionally emphasized as crucial elements were the end-users participation in every phase of the deployment process and the particular training. Software adaptability enables end users and companies to customize electronic records to their specifications [4]. The American Physical Therapy Association (APTA) has established guidelines for physical therapy documentation with the appropriate security and regulatory requirements for handwritten and computerized documentation systems.

METHODOLOGY

The DMAIC Methodology cycle —Define, Measure, Analyze, Improve, and Control— as shown in Figure 1, was applied to optimize the physiotherapy evaluation process.

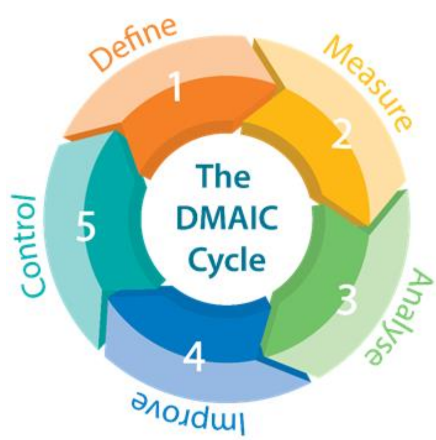

Figure 1
DMAIC Cycle

Define

The define stage started with problem definition and brainstorming:

- **Problem definition:** The physiotherapy company has utilized an Electronic Health Record system for almost four years. However, the electronic system has not yet reached its maximum potential. The electronic system has not been appropriate to perform the patient's physical treatment evaluation. The system's default evaluation does not fully meet the examination/evaluation method requirements. The evaluation format did not entirely support the process, and the data entry was not arranged logically. Many data fields are not necessary for the patient assessment process. These conditions imply that each patient's assessment takes 1.25 hours using the electronic system. This circumstance reduces process efficiency and restricts the number of patients assessed per hour. Consequently, the company has continued using the manual approach throughout the years.
- **Brainstorming:** It was identified that developing customized templates in the electronic system for each element of the evaluation process would enhance the effectiveness and the physiotherapist's job satisfaction with their patients.

Measure

The average time of the patient's physical therapy evaluation was verified using historical data and process information gathered during the measurement stage. As a baseline, the average evaluation time using the electronic system in its initial form was confirmed and contrasted with the average evaluation time using the manual approach. The following average timings were observed:

- Time using the Electronic System: 1.25 hours
- Time using the handwritten method: 0.75 hours

Analyze

The initial evaluation/examination should include the following components, according to the Guidelines for Physical Therapy Documentation [5]:

- Diagnosis – This element comprises the reason behind the patient's referral and the activities the physical therapist deemed limited and restricted.
- Examination – This element comprises the patient's medical history, related symptoms and duration (subjective section in the system), system evaluation, and tests and measurements physically taken by the physical therapist.
- Evaluation – This element comprises the assessment of the patient's difficulties, functional aspects, and other associated symptoms. Moreover, the assessment of the information gathered throughout the examination (objective section in the system).
- Prognosis – This element describes the projected level of patient improvement that could be attained with the treatment and the time required to reach it. The plan of care element may also address this component.
- Plan of Care – This element includes patient goals, treatment plan, frequency and duration, and the patient release plans.

In the analysis phase, the manual method and the electronic system were compared based on their initial states to conduct the patient's physiotherapy evaluation process. The electronic system was not feasible in its initial state to perform the evaluation. This is mostly due to the format's lack of customization and adaptation to the process requirements. Opportunities were found using both approaches, as Table 1 illustrates.

The electronic system can be adjusted to meet the specific requirements of individual clinical practices and adapted to the process's workflows. It was suggested that the physiotherapy evaluation procedure be optimized by developing a customized template in the electronic system.

Table 1
Evaluation Process Opportunities

Process Opportunities	Manual Process	Electronic System Evaluation
Content does not fully match the evaluation process / Not customized		X
Format not adapted and structured		X
Data content with information not relevant to the Physical Therapy field		X
Collecting more data than required		X
Menu-driven and data entry not user-friendly		X
Lack of field for information needed		X
Request patient information in various instances		X
Potential for typographical errors	X	
Data retrievable and storage space	X	
Paper waste	X	
Long narrative notes to be documented	X	
Treatment plan not available immediately	X	
Duplicity in the form	X	
Required other administrative tasks (document scanning)	X	

The physiotherapy company uses Tebra, formerly Kareo, as its electronic system. Healthcare professionals use this software platform to streamline documentation by creating customized templates for their specific needs. You can either build the template from scratch or use the system's test options and library templates, which can be modified to create a new template. The opportunities identified in Table 1 for the electronic approach can be addressed by developing a personalized template for the physical therapy evaluation process, resulting in a simplified and optimized procedure. The template can be created with the necessary structured data field arrangement to support record integrity efficiently.

Moving from the manual method to the electronic system for patient evaluation has several additional benefits, including satisfying the needs of the end user, allowing the template to be adjusted to the process flow, making format and data entry easier for the end user, removing redundant patient information and data collection, enabling the use of checklists rather than extended narrative notes, and facilitating the data retrieval. Further benefits of using electronic records instead of the manual method include reducing the amount of space needed for paper record storage, enhancing communication between the patient and other service providers, facilitating systems integration, enabling prompt access to patient data and the care plan, and allowing more time for the healthcare provider to spend with patients.

Improve

The improvement stage included the creation of a customized template in the electronic system's physiotherapy evaluation, as shown in Figure 2.

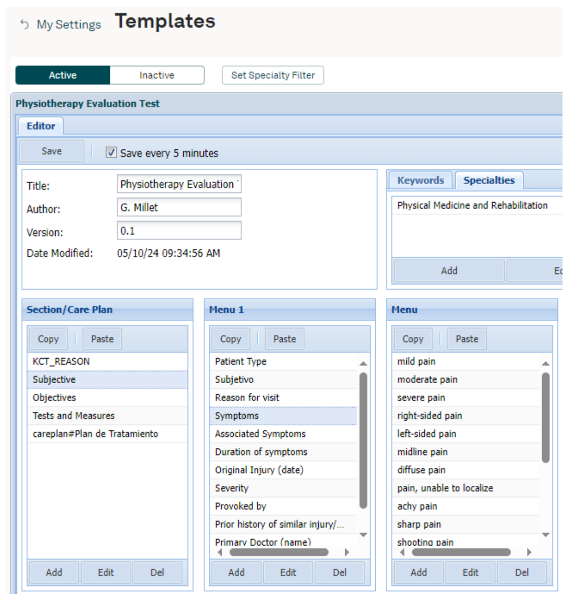

Figure 2
Electronic System Template Editor

This phase also involved the comprehensive and debugging tests and the implementation plan. Regarding creating the template, the evaluation reference handwritten form, the physiotherapy documentation guidelines [5], and the Tebra clinical template editor's guide [6] were consulted. The template design and structure were based on the end-user requirements. The involvement of the end-users in all project phases was crucial to guarantee that their needs and the clinical process workflow were satisfied.

Control

The Tebra Electronic Health Records system will maintain control of the new customized template usage during the physiotherapy evaluation process. Educating the end-user on how to use the new template is one of the essential elements of a successful implementation and control strategy. The training was provided to the end user. Periodic reviews will be conducted to oversee the utilization of the template and to perform any updates based on evaluations after the implementation.

RESULTS

The following outcomes demonstrated the process of physiotherapy evaluation optimization:

- The design of the new custom template followed the evaluation process workflow.
- It is feasible to substitute the manual approach and associated duties with the new customized template for evaluation in the electronic system.
- The data collection and template structure for patient information are easy to use and eliminate redundant steps for the end user.
- The waste of paper will be significantly reduced after the new template is fully adopted.
- Using the new custom template, the average period of time spent on patient evaluations was 0.70 hours.

CONCLUSIONS

The optimization of the physiotherapy evaluation process can be achieved by using the electronic medical history system, adapting the system to the clinician's process workflows, and taking advantage of the system features. The process efficiency was improved by creating and utilizing personalized templates to replace the manual method in the physical therapy patient assessment and evaluation. To improve process efficiency, the template elements must be in line with the process workflow and organized in a structured manner for patient data collection. The system can be customized using adaptable features based on the end user's needs.

There is a positive impact with the use of customized templates in reducing the evaluation duration and increasing process efficiency. Utilizing the electronic system's full potential and functionalities to optimize related operations and other processes has many advantages for the company.

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