Teleconsulting monitoring and management system (smgt): application for monitoring and managing teleconsulting activities

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Abstract

Introduction: *Teleconsulting is a dialogue between Primary Care professionals and specialists, in order to clarify doubts about the work process, clinical care, and health promotion.* ***Objective***: *To explore the functionalities, the benefits of the Teleconsultation Monitoring and Management System (SMGT) and integration with the Online Interactive Strengthening System platform for Primary Care, as well as to evaluate its effectiveness and impact on the management of teleconsultations at the Telehealth Center from the Federal University of Maranhão (NTS-UFMA).* ***Method:*** *Descriptive approach, detailing the development and functionalities of the SMGT, to automate the management of teleconsultations, aiming to improve the efficiency and accuracy of managed data.* ***Results and discussion:*** *The results show that the SMGT provides automated information search, indicator generation, continuous monitoring, and the production of customized reports. These features have increased the agility and accuracy of processes, reducing human errors and facilitating data-driven decision-making. Moreover, the system has improved the transparency and monitoring capacity of teleconsultations, ensuring that data are always up-to-date and accessible.* ***Conclusion:*** *The implementation of the SMGT represented a significant advance in the management of teleconsultations, strengthening the NTS-UFMA's capacity to respond to the growing demands of the community.*

Key-words: Telehealth Monitoring. Health Management. Health Information System.

Resumen

Teleconsulting monitoring and management system (smgt): application for monitoring and managing teleconsulting activities

Introducción: *La Teleconsulta es un diálogo entre profesionales de Atención Primaria y especialistas, con el fin de aclarar dudas sobre el proceso de trabajo, la atención clínica y la promoción de la salud.* ***Objetivo***: *Explorar las funcionalidades, los beneficios del Sistema de Monitoreo y Gestión de Teleconsultas (SMGT) y la integración con la plataforma del Sistema Interactivo de Fortalecimiento en Línea para Atención Primaria, además de evaluar la efectividad e impacto en la gestión de las teleconsultas en el Centro de Telesalud desde el Universidad Federal de Maranhão (NTS-UFMA).* ***Método:*** *Enfoque descriptivo, detallando el desarrollo y funcionalidades de SMGT, para automatizar la gestión de teleconsultas, con el objetivo de mejorar la eficiencia y precisión de los datos gestionados.* ***Resultados y discussíon***: *Muestran que SMGT proporciona búsqueda automatizada de información, generación de indicadores, seguimiento continuo y producción de informes personalizados. Estas características aumentaron la agilidad y precisión de los procesos, reduciendo los errores humanos y facilitando la toma de decisiones basadas en datos concretos. Además, el sistema mejoró la transparencia y la capacidad de seguimiento de las teleconsultas, asegurando que los datos estén siempre actualizados y accesibles.* ***Conclusión:*** *La implementación del SMGT representó un avance significativo en la gestión de teleconsultas, fortaleciendo la capacidad de la NTS-UFMA para responder a las crecientes demandas de la comunidad.*

Palabras clave: Monitoreo en la Telesalud. Gestión en Salud. Sistema de Información en Salud.

Resumo

Teleconsulting monitoring and management system (smgt): application for monitoring and managing teleconsulting activities

Introdução: *A teleconsultoria é um diálogo entre profissionais da Atenção Primária com especialistas, a fim de esclarecer dúvidas sobre processo de trabalho, cuidados clínicos e promoção de saúde.* ***Objetivo***: *Explorar as funcionalidades, benefícios do Sistema de Monitoramento e Gerenciamento de Teleconsultorias (SMGT) e a integração com a plataforma de Sistema Online de Fortalecimento Interativo para Atenção Primária, além de avaliar a eficácia e impacto na gestão de teleconsultorias no Núcleo de Telessaúde da Universidade Federal do Maranhão (NTS-UFMA).* ***Método:*** *Abordagem descritiva, detalhando o desenvolvimento e as funcionalidades do SMGT, para automatizar a gestão das teleconsultorias, visando melhorar a eficiência e a precisão dos dados gerenciados.* ***Resultados e Discussão:*** *Evidenciam que o SMGT proporciona uma busca automatizada de informações, geração de indicadores, monitoramento contínuo e produção de relatórios personalizados. Essas funcionalidades aumentaram a agilidade e precisão dos processos, reduzindo erros humanos e facilitando a tomada de decisões baseada em dados concretos. Além disso, o sistema melhorou a transparência e a capacidade de monitoramento das teleconsultorias, assegurando que os dados estejam sempre atualizados e acessíveis.* ***Conclusão:*** *A implementação do SMGT representou um avanço significativo na gestão das teleconsultorias, fortalecendo a capacidade do NTS-UFMA de responder às demandas crescentes da comunidade.*

Palavras-chave: Monitoramento em Telessaúde. Gestão em Saúde. Sistemas de Informação em Saúde..

INTRODUCTION

Teleconsultations are an essential help of the service offering of the Telehealth Centers, linked to the Telehealth Brazil Networks Program (Programa Telessaúde Brasil Redes). In these, a dialogue between Primary Health Care (PHC) professionals and managers with specialist professionals allows for the clarification of doubts related to the service, clinical care, and health promotion. Teleconsultations can be carried out synchronously (real-time), via messages or videoconferences, or asynchronously (offline messages). Questions must be answered within 72 hours[1-3]. Questions related to clinical care and health promotion aim to allow PHC professionals in Basic Health Units (UBS) to resolve doubts that arise in their clinical practice with a teleconsultant. This is a professional specialized in the health area in which the doubt was raised[4].

The Programa Telessaúde Brasil Redes is nationwide and a nationwide government initiative, and therefore there is a need to evaluate it to monitor the quality of care provided to citizens, highlight gaps in its process, structure, and/or results, in the search for improvement[3,5].

The Telessaúde Center of the Federal University of Maranhão (NTS-UFMA- Núcleo de Telessaúde da Universidade Federal do Maranhão) became part of the Programa Telessaúde Brasil Redes in 2014 and offers teleconsultations and teleeducation activities aimed at Primary Health Care workers in the state of Maranhão.

Due to the large flow of teleconsultations and teleeducation activities offered, these initiatives increased the volume of data to be managed. Manually, this process became inefficient and prone to errors, compromising the quality and efficiency of the services provided.

In this context, NTS-UFMA identified the urgent need for a technological solution capable of optimizing these processes, to improve the acquisition, management, and monitoring of data collected in the various activities carried out by the Center.

To meet this demand, NTS-UFMA developed the Teleconsultation Monitoring and Management System (SMGT)[6]. This web system was designed to integrate and automate the search for information available on the teleconsultation platform, providing more efficient and effective management of this information[7].

OBJECTIVE

- To explore the functionalities and benefits of the Teleconsultation Monitoring and Management System (SMGT-Sistema de Monitoramento e Gerenciamento de Teleconsultorias) and the integration with the SOFIA platform;

- To evaluate the effectiveness and impact of this system in the management of teleconsultations.

METHOD

This is a descriptive approach to the development and functionalities of the SMGT developed by the Núcleo de Telessaúde da Universidade Federal do Maranhão (UFMA) in 2014.

The entire methodology for developing the SMGT will be detailed, showing the functionalities: automated information search, generation of indicators, continuous monitoring, personalized reports, and their benefits.

Functionalities

1. **Automated Information Search**: The system automatically searches for data in SOFIA, ensuring that all information is up-to-date and complete.

2. **Generation of Indicators**: With the data collected, SMGT generates indicators that are essential for project management. These indicators provide a clear and detailed view of the performance of teleconsultations, facilitating the identification of areas that require improvement.

3. **Continuous Monitoring**: The system enables continuous monitoring of activities, ensuring that any deviations or problems are quickly identified and corrected.

4. **Customized Reports**: Users can generate customized reports based on the collected data, aiding in strategic decision-making.

Benefits

1. **Agility**: Process automation has significantly reduced the time required for data collection and analysis.
2. **Accuracy**: Reducing human error has resulted in more accurate and reliable data.
3. **Decision Making**: Clear and detailed indicators, enable managers to make decisions based on concrete data, improving the efficiency and quality of teleconsultations.
4. **Transparency**: The system allows a clear view of performance and activities carried out, promoting greater transparency in management.

RESULTS AND DISCUSSION

The system has several functionalities, including a module for monitoring all stages of the teleconsultation process; control of payment for answered requests; generation of graphs to illustrate the main indicators, and an audit module for answered teleconsultations (Figure 1).

Figure 1 - Teleconsulting Monitoring and Management System Functionalities

Source: Own autorship (2024) – Translated.

We used the parameters recommended by the Ministry of Health to assess the quality of teleconsultations[8,9].

SMGT not only facilitates the monitoring and management of teleconsultations but also provides a solid basis for strategic decision-making. With access to detailed and accurate data, we can identify trends, evaluate the effectiveness of implemented policies, and make decisions that promote continuous improvement of the service. The System works as a robust dashboard that centralizes and presents critical information in a clear and accessible manner.

The figures below show how the data from the features are presented in SMGT. The graph generation module facilitated the analysis of the indicators, allowing better management of the information and quick and effective decision-making.

Teleconsulting monitoring provides an intuitive interface for users to view various performance indicators (Figure 2).

Figure 2 - SMGT Monitoring Dashboard

Source: SMGT platform (2024).

The teleconsultation status evolution module has the function of monitoring all stages, which prevents delays in the response preparation deadlines as well as the final evaluation carried out by the user. The process indicators monitor all stages of the teleconsultation process (Figure 3).

Figure 3 – Interface for following teleconsultation steps
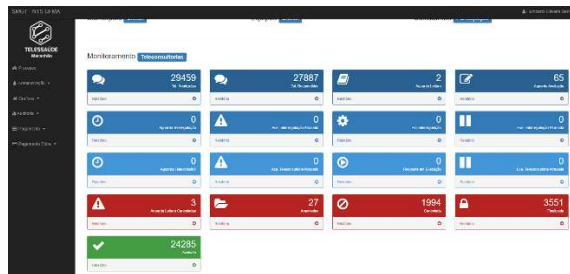
Source: SMGT platform (2024).

A key feature of SMGT is the ability to export data to other applications. This is essential for creating more detailed reports, performing advanced analyses, and integrating with existing decision-making systems in other healthcare institutions. Data can be exported in formats such as CSV, Excel, and XML, ensuring interoperability and flexibility in the use of information.

The Structure Indicators tab interface displays different categories of reports that can be generated for monitoring and analyzing teleconsultations, such as reports related to human resources (requesting professionals) of health teams registered by basic health units (UBS- unidades básica de saúde) (Figure 4).

Figure 4 - Reports Available in SMGT

Source: SMGT platform (2024).

In the quality indicators tab, the generation of graphs to illustrate the main indicators facilitates their analysis, allowing better management of information and decision-making quickly and effectively. It also allows monitoring of the participation of teams from all municipalities registered on the platform (Figure 5).

Figure 5 - Interface with quality indicators

Source: SMGT platform (2024).

The audit module for answered teleconsultations is the way to technically assess the quality of the responses prepared by teleconsultants. The number of audited teleconsultations is determined by sampling at the end of each month and the sample size is obtained based on the estimate of the population proportion. To assess the quality of teleconsultations, the parameters recommended by the Ministry of Health are used (Figure 6 and Figure 7).

Figure 6 - Gráfica pizza dos resultados da auditoria interna e avaliação do solicitante
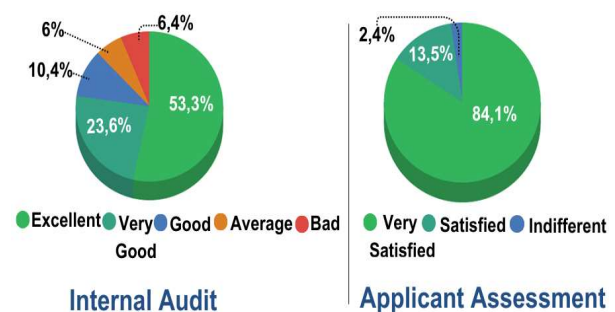
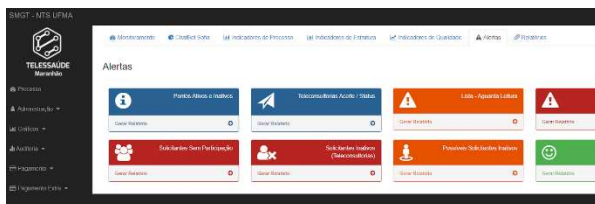Source: SMGT platform (2024) – Translated.

Figure 7 - Audit results interface

Source: SMGT platform (2024).

The alerts module allows to anticipate applicants without participation, inactive and active applicants, and indicators whose status needs to be monitored, so that it has the function of monitoring all stages, avoiding delays in the deadlines for preparing the response, as well as the final evaluation carried out by the user (Figure 8).
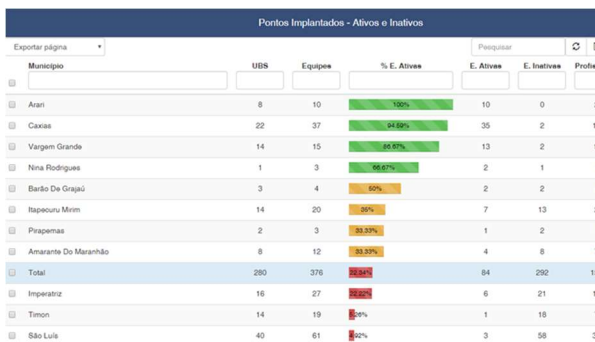
Figure 8 - Alerts interface

Source: SMGT platform (2024).

The system also allows monitoring of the participation of teams from all municipalities registered on the platform (Figure 9).

Figure 9 - Implemented Points - Active and Inactive in SMGT

Source: SMGT platform (2024).

Payment control reduces the possibility of human error in preparing the amount for teleconsultation payments and organizes their distribution among teleconsultants, avoiding work overload for a given professional (Figure 10).

Figure 10 - Teleconsultant payment control interface
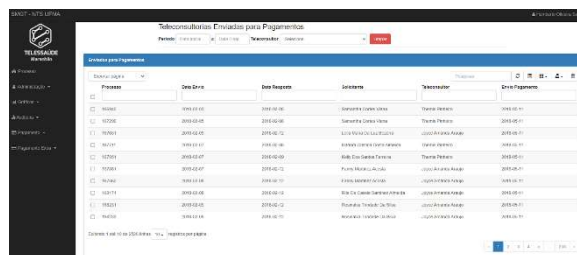
Source: SMGT platform (2024).

Based on the above, it is possible to follow the workflow shown in the figure 11.

Figure 11 shows the entire flow and stages of teleconsultations, from the implementation of the point to the evaluation of the response by the requester.

Thus, the requester sends the question through the system, and the teleregulator evaluates and directs the request to the appropriate teleconsultant. Subsequently, the teleconsultant analyzes the question and sends a response back to the requester. Once in possession of the response, the requester evaluates the quality and usefulness of the teleconsultant's response.

If the requester's evaluation is negative, the platform monitor contacts the requester and, if necessary, the teleconsultant to clarify any doubts.

When the number of requesters decreases, the field monitor encourages and helps users to continue using the platform, acting as an essential facilitator to maintain the production of teleconsultations. The platform monitor monitors the teleconsultant so that the question is answered promptly and the requester can read and evaluate the response, ensuring the quality and speed of the process.

In this context, SMGT emerges as an important innovation to optimize the management of SOFIA (Online System for Interactive Strengthening of Primary Care) teleconsultations, a platform designed and developed by the Telehealth Center of the Federal University of Maranhão in 2018, a consolidated tool for managing health information as an integrated platform with several essential functionalities for monitoring, evaluation, and decision-making.

The integration with the SOFIA platform provides SMGT with an expanded capacity for data collection and processing. This ensures that the information presented on the dashboard is always up-to-date and accurate.

Figure 11 - Teleconsultation flowchart
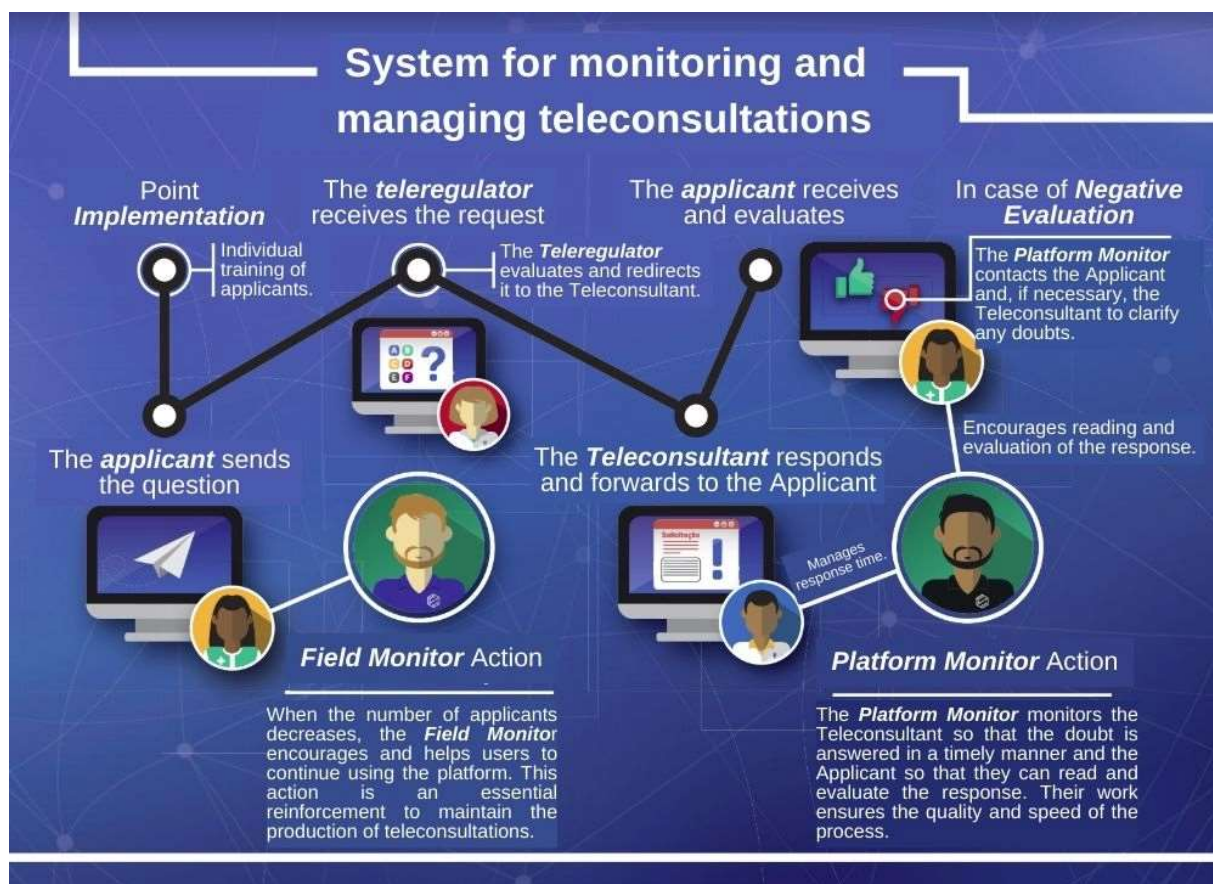
Source: Own autorship (2024) – Translated.

CONCLUSION

Based on this research, we can state that the creation and implementation of the Teleconsultation Monitoring and Management System (SMGT) by NTS-UFMA represented a significant milestone in the management of teleconsultations. By automating processes, generating accurate indicators, and enabling continuous monitoring, the SMGT not only improves the efficiency and quality of services provided but also strengthens the Telehealth Center's ability to respond to the growing needs of its community.

The SMGT, together with the SOFIA platform, constitutes a powerful tool that not only improves the efficiency and quality of teleconsultations but also strengthens management capacity and decision-making.

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