

Program to strengthen specific job skills in a Health Records and Statistics department**Programa de fortalecimiento en competencias laborales específicas en un departamento de Registros y Estadísticas de Salud****Programa para fortalecer habilidades específicas de trabalho em um departamento de Registros e Estatística de Saúde**

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ABSTRACT

Introduction: measuring the perception of service quality and user satisfaction is a fundamental strategy for implementing training that strengthens the specific work competencies of health professionals.

Objective: to describe the methodological protocol designed to evaluate the effect of a strengthening program in specific work competencies on improving service quality and user satisfaction in a Health Records and Statistics Department. **Method:** a quasi-experimental quantitative study was designed with a pretest-posttest design without equivalent group, prospective and explanatory in the period from January 2024 to December 2025 to select a sample of 303 external users of both sexes, aged equal to or older than 18 years who received the service at the medical appointment window. **Results:** the study is expected to provide evidence for the

development, implementation, and establishment of institutional policies that promote ongoing training as an essential component of healthcare quality management. This will not only strengthen the operational efficiency of Health Records and Statistics professionals at medical appointment counters but will also be applicable in similar contexts. An estimated 9% impact on perceived service quality and user satisfaction is expected. **Conclusions:** the focus of this type of program on a real and relevant problem is highlighted, as well as the rigorous methodology for validating the training program and a robust statistical analysis plan that allows for accurate evaluation of the results.

Keywords: specific job competencies; healthcare service quality; user satisfaction; healthcare training

RESUMEN

Introducción: medir la percepción de la calidad del servicio y la satisfacción del usuario es una estrategia fundamental para implementar capacitaciones que fortalezcan las competencias laborales específicas de los profesionales de la salud.

Objetivo: describir el protocolo metodológico diseñado para evaluar el efecto de un programa de fortalecimiento en competencias laborales específicas en la mejora de la calidad del servicio y la satisfacción del usuario en un departamento de Registros y Estadísticas de Salud. **Método:** se diseñó un estudio cuantitativo de tipo cuasi experimental con diseño pretest-posttest sin grupo equivalente, prospectivo y explicativo en el período de enero de 2024 a diciembre de 2025 para seleccionar una muestra de 303 usuarios externos de ambos géneros, con edades iguales o mayores a 18 años que recibieron el servicio en la ventanilla de citas médicas. **Resultados:** el estudio se espera aporte evidencia para el desarrollo, implementación y establecimiento de políticas institucionales que fomenten la capacitación continua como un componente esencial en la gestión de la calidad en salud, donde no solo fortalecerá la eficiencia operativa de los profesionales de Registros y Estadísticas de Salud en las ventanillas de citas médicas, sino que será aplicable en contextos similares. Se espera un efecto estimado en un 9 % sobre la percepción de la calidad del servicio y la satisfacción del usuario. **Conclusiones:** se destaca el enfoque de este tipo de programa en una problemática real y relevante, así como la metodología rigurosa para la validación del programa de capacitación, y un plan de análisis estadístico robusto que permite evaluar los resultados con precisión.

Palabras clave: competencias laborales específicas; calidad de servicio en salud; satisfacción del usuario; capacitación en salud

RESUMO

Introdução: mensurar a percepção da qualidade do serviço e a satisfação do usuário é uma estratégia fundamental para a implementação de treinamentos que fortaleçam as competências específicas de trabalho dos profissionais de saúde.

Objetivo: descrever o protocolo metodológico elaborado para avaliar o efeito de um programa de fortalecimento de competências específicas de trabalho na melhoria da qualidade do serviço e da satisfação do usuário em um Departamento de Registros e Estatística em Saúde. **Método:** foi delineado um estudo quantitativo quase experimental com delineamento pré-teste-pós-teste sem grupo equivalente, prospectivo e explicativo no período de janeiro de 2024 a dezembro de 2025 para selecionar uma amostra de 303 usuários externos de ambos os sexos, com idade igual ou superior a 18 anos que receberam o atendimento na janela de consulta médica. **Resultados:** espera-se que o estudo forneça evidências para o desenvolvimento, implementação e estabelecimento de políticas institucionais que promovam a formação contínua como componente essencial da gestão da qualidade da saúde. Isso não só fortalecerá a eficiência operacional dos profissionais de Registros de Saúde e Estatística nos balcões de atendimento, como também será aplicável em contextos semelhantes. Estima-se um impacto de 9% na qualidade percebida do serviço e na satisfação do usuário. **Conclusões:** o foco deste tipo de programa num problema real e relevante é destacado, bem como a metodologia rigorosa para validação do programa de formação e um plano de análise estatística robusto que permite uma avaliação precisa dos resultados.

Palavras-chave: competências específicas para o trabalho; qualidade dos serviços de saúde; satisfação do utilizador; formação em saúde

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INTRODUCTION

User satisfaction, understood as the perceived discrepancy between expectations and the performance of the service received, has established itself as an essential metric for evaluating the quality of healthcare services and constitutes a critical indicator in the development of improvement plans⁽¹⁾. Various factors such as waiting time, responsiveness, the appointment system, communication of accurate and truthful information, as well as the quality of treatment received, influence user satisfaction⁽²⁾. Understanding these factors is crucial, as user satisfaction and service quality are directly related.⁽³⁾

In addition to service quality, the job competencies of healthcare personnel play a determining role in user satisfaction.⁽⁴⁾ Aspects such as effective communication, problem-solving, affective organizational commitment, and time management are some of the essential factors for providing high-quality service.⁽⁵⁾

In this sense, continuous professional development is crucial to ensure that healthcare personnel maintain and improve their knowledge and skills, which is This translates into improved service quality and, consequently, a significant increase in user satisfaction.^(6,7)

Currently, several studies have identified specific dissatisfaction with healthcare services. In Ethiopia, a study revealed poor service quality, incompetent health providers, unfriendly staff, and disrespectful treatment.⁽⁸⁾ In Europe, in countries such as France, Germany, Spain, and Portugal, the perception of the quality of health services is low.⁽⁹⁾

In Latin America and The Caribbean, surveys conducted in Health Institutions have reported that 30% of people lack adequate access to care, and less than 40% rate it as good quality⁽¹⁰⁾. Specific studies in countries such as Peru and Ecuador have reported low levels of user satisfaction, with indicators of dissatisfaction such as reliability, responsiveness, empathy, and tangible aspects^(11,12).

In this sense, within the framework of strengthening public management, it is imperative that health facilities implement training programs that improve the specific job skills of professionals in the Department of Health Records and Statistics (REGES). These programs not only fulfill the essential functions of public health, particularly in the development of human resources, monitoring, and evaluation⁽⁷⁾, but also positively impact the quality of service and user satisfaction, in addition to contributing to operational efficiency and resource optimization in the health system.⁽⁴⁾

By improving the capabilities of health personnel in areas such as communication, professional attitudes, technical knowledge, a climate of trust, and teamwork, health governance is strengthened and comprehensive and effective care is promoted, aligned with the strategic objectives of public management and national health policies.

The Dr. Roberto Ramírez De Diego Polyclinic belongs to the primary care level and is one of the 72 implementing units of the Social Security Fund that provide health services to the entire Panamanian population. This health facility offers its covered population a broad portfolio of medical, specialized, and technical services and health programs to provide care to all its users. The REGES department is comprised of the clinical records, statistics, and appointment processing sections. The latter is responsible for managing and processing medical appointments, in addition to providing quality service that is efficient, timely, and comprehensive to all users who request services at the medical appointment window.

In Panama, service quality and user satisfaction in public healthcare institutions are evidently low (53.3%). Possible causes of dissatisfaction include human resources and the management system.⁽¹³⁾ Likewise, a survey conducted at the Dr. Roberto Ramírez De Diego Polyclinic (Chitré) showed an overall satisfaction rate of 3.8%.⁽¹⁴⁾

Given this situation, the objective of this study protocol is to determine how a program for strengthen specific job skills improve the perception of service quality and user satisfaction at the medical appointment window of the Dr. Roberto Ramírez De Diego Polyclinic of the Social Security Fund.

METHOD

This is a quasi-experimental study with a pretest-posttest, prospective, non-matching group, and application-based design to validate the effect of a specific occupational skills strengthening program (PFCLE) on perceived service quality and user satisfaction at the medical appointment window of the Dr. Roberto Ramírez De Diego Polyclinic, part of the Panama Social Security Fund. The baseline data were collected during both shifts (morning and afternoon) in May 2025. The intervention was carried out on weekdays from June to July 2025, over a period of nine weeks.

The study population consists of external users of both genders, aged 18 years or older, who receive services at the medical appointment window of the Department of Health Records and Statistics (REGES). The study will be conducted at the Dr. Roberto Ramírez De Diego Polyclinic, part of the Social Security Fund, located on Independencia Street, San Juan Bautista District, Chitré District, and Herrera Province, Panama.

The study sample will consist of 303 subjects of both genders, aged 18 years or older. External users who have completed their appointments at the doctor's office will be selected. This is due to the ease of selection and approach in a realistic and operational environment, allowing for direct and efficient capture of user experiences and perceptions.

Convenience sampling will be used. The sample size was calculated using the formula for estimating a population proportion, using as a reference the reported overall satisfaction level of 70% at the Dr. Roberto Ramírez De Diego Polyclinic.⁽¹⁴⁾ The criteria used to calculate the sample were a 9% effect size over the expected pre-intervention proportion of 70%, with a 95% confidence interval ($Z_{\alpha}=1.96$), 80% statistical power ($Z_{\beta}=0.84$), and a 5% margin of error

External users of both sexes, aged 18 years or older, who received service at the appointment window will be included. Users with poor or no comprehension or communication skills will be excluded from the study. This exclusion is justified by the need to obtain accurate and comparable information, and not for discriminatory reasons.

The sample of staff members consisted of seven professionals who work exclusively at the appointment counters of the REGES department at the Dr. Roberto Ramírez De Diego Polyclinic. Their selection was based on a census sample, as these professionals represent the entire staff providing direct care to users in this service.

Data will be collected on weekdays and during both shifts (morning and afternoon) to ensure representativeness of the participants and avoid interfering with the service. Key demographic characteristics will be systematically recorded for each participant to ensure adequate representation of population subgroups. Data were reviewed and verified daily to ensure quality and to balance the sample if necessary. Data analysis will be performed exclusively on subjects who participated in the study during the pre- and post-intervention periods.

The study's primary and secondary outcome variables will be measured in May (pre-test) and August 2025 (post-intervention) on weekdays and during both shifts (morning and evening). Service quality will be assessed using five dimensions: responsiveness, tangible elements, safety, reliability, and empathy. Each of these dimensions will be measured on a Likert-type scale, with 1 indicating the lowest value (very dissatisfied) and 5 indicating the highest value (very satisfied). Responsiveness will be assessed based on the speed and efficiency of the service received, while tangible elements will be measured through user perceptions of the appearance of the appointment window and the personal appearance of REGES professionals.

For its part, security will be measured by considering the trust and peace of mind conveyed by REGES professionals. Reliability will be measured through the consistency and accuracy of the service received. Empathy will be assessed in terms of the personalized attention and genuine interest shown by REGES professionals.

To assess the level of satisfaction, users will evaluate five dimensions: communication, professional attitudes, technical knowledge, climate of trust, and teamwork. In the communication dimension, users will measure the clarity and effectiveness of the information provided by REGES professionals. Regarding professional attitudes, the staff's friendliness and willingness to provide service will be measured. Regarding technical knowledge, the staff's ability to efficiently manage medical appointment systems and respond to user inquiries will be assessed. Finally, the climate of trust and teamwork will be assessed through the perception of security and cooperation among staff.

A sociodemographic survey was conducted to measure the general data of users receiving service at the medical appointment window. This unprecedented instrument was validated by expert judges in a pilot study (n=30) to assess its validity and reliability. Data collection, conducted by the principal investigator, will take place between January and April 2025. Sociodemographic data, as well as perceptions of service quality and external user satisfaction, will be measured in the pre- and post-tests. For this analysis, the adapted and validated SERVPERF (Service Performance) model will be used, with a Cronbach's alpha coefficient of 0.887 to measure perceptions of service quality in all its dimensions: responsiveness, tangible elements, security, reliability, and empathy.⁽¹⁵⁾

The second instrument, designed to measure SU, is also based on the SERVPERF model but has been adapted to include additional dimensions such as effective communication, professional attitudes, technical knowledge, climate of trust, and teamwork. In this case, the original "Patient Perception" dimension has been replaced by "Teamwork" to align with the specific needs of the study. This questionnaire has a Cronbach's alpha coefficient of 0.902.⁽¹⁵⁾ The data obtained will be collected and coded using a paper questionnaire, then digitized and tabulated in a data matrix using the Statistical Package for the Social Sciences (SPSS) version 27, according to the type and measurement scale of the variables.

Participant selection (baseline), informed consent signature, and data collection (pretest) will begin. This phase will take place in May 2025. For the baseline measurement, a survey was conducted with five dimensions for the perception of service quality (responsiveness, tangible elements, security, reliability, and empathy) and five dimensions for user satisfaction (communication, professional attitudes, technical knowledge, climate of trust, and teamwork).

The intervention proposal (a program to strengthen specific occupational skills) will then be developed from June to July 2025. Throughout the process, compliance with all proposed activities will be verified. The Kirkpatrick Model will be used to evaluate the program, consisting of four levels: Reaction (Level 1), which measures participants' perceptions of the relevance and appropriateness of the training; Attitude and Learning (Level 2), which assesses the acquisition of knowledge, skills, and attitudes, as well as commitment and confidence in what has been learned; Behavior (Level 3), which examines the practical application of what has been learned in the workplace; and Outcomes (Level 4), which focuses on the measurable effects on job performance.

First, detailed planning of the intervention program will be carried out. This program will be structured around five key competencies: communication, professional attitudes, technical knowledge, climate of trust, and teamwork. Training materials will be developed, including case studies, group work, and self-assessment tools. Expert facilitators were responsible for delivering the training sessions, which were organized on a schedule across several days of the week, ensuring that all professionals could participate without interfering with their work responsibilities.

Throughout the program, periodic evaluations using the Kirkpatrick Model will be implemented to monitor participant progress. For Level 1 (Reaction), satisfaction surveys will be administered at the end of each module to capture participants' impressions of the quality of the content, the facilitator's competency, and the relevance of the topic. At Level 2 (Learning), pre- and post-training tests will be conducted to measure increased technical knowledge, along with direct observations in the work environment. Level 3 (Outcomes) will allow for real-time adjustments to the program content, ensuring that the training sessions respond to the specific needs of REGES professionals.

At Level 4 (Outcomes), user satisfaction will be measured as an indicator of the intervention's impact. Although specific job skills will not be measured, the dimensions assessed for user satisfaction (communication, professional attitudes, technical knowledge, climate of trust, and teamwork) reflected the program's success in improving service quality.

Finally, the final evaluation will be conducted after nine weeks of intervention during June and July 2025. It included measurement of sociodemographic variables, perceptions of service quality, and user satisfaction.

Among the ethical considerations, the first step will be to obtain a No Objection certification from the National Department of Teaching and Research (DENADOI) - Research and Bioethics Section (SIBI). Once this certification is obtained, the preliminary project will be registered on the Ministry of Health's RESEGIS platform. Subsequently, the preliminary project is approved by the Institutional Research Ethics Committee (CIEI) of the Social Security Fund. With this approval, the DENADOI-SIBI will be requested for final authorization, upon which the registration code will be issued. The Teaching and Research Coordinator at the Dr. Roberto Ramírez De Diego Polyclinic will then be notified for registration and review, as well as to obtain the endorsement of the Medical Directorate.

Finally, at the conclusion of the study, the final report and the publication resulting from the research will be submitted to both DENADOI-SIBI and the Bioethics Committee. Prior to signing the informed consent form, an induction session will be held for participants on the purpose and benefits of the study. Research assistants (RAs) will also be trained on the applicability, use, and handling of the questionnaire and the confidentiality of the data collected during the study, as well as on the completion of good clinical practice courses.

Finally, participant confidentiality will be guaranteed, personal data will be withheld, and only summaries of the analyses will be presented. The results will be used solely for research purposes, improving the perception of service quality, and external user satisfaction.

SPSS 27 (Statistical Package for the Social Sciences) software will be used to perform the statistical analysis. First, to control for initial differences between the pretest and posttest (non-equivalent) groups, propensity score matching (PSM) was applied through binary logistic regression, reducing selection bias. Once the groups were matched, demographic variables were described, differentiating them into qualitative and quantitative variables. The Kolmogorov-Smirnov test was used to assess the normality of quantitative variables. These variables will be described using the mean and standard deviation if they are normally distributed, or the median and interquartile range if they are not. Additionally, the mean and 95% confidence interval will be included.

Qualitative variables will be presented using absolute and relative frequencies, as well as proportions and 95% confidence intervals. Next, to analyze the relationship between the qualitative and dependent demographic variables (service quality and user satisfaction), the Chi-square test or Fisher's exact test will be applied for cells with low expected frequencies, and for the quantitative demographic variables, the Spearman correlation test was used. Subsequently, the relationship between service quality and user satisfaction will be examined using the Spearman correlation test, given that both variables are ordinal. Next, the effect of the independent variable (intervention) on the dependent variables will be evaluated by comparing the scores between service quality and user satisfaction (pretest and posttest) using the Mann-Whitney U test, considering that they are ordinal.

Additionally, to evaluate the expected 9% increase in the proportion of satisfied users (from 70% in the pretest to 79% in the posttest), the Z-test for independent proportions will be applied. Finally, an ordinal logistic regression analysis will be performed to evaluate the effect of the independent variable on the dependent variables, including control variables such as demographic variables (age, gender, marital status, religion, education, occupation, user type, area of residence, service level) to better fit the results. Statistical significance will be determined with a p-value < 0.05.

RESULTS

The study provides evidence for the development, implementation, and establishment of institutional policies that promote ongoing training as an essential component of healthcare quality management. This will not only strengthen the operational efficiency of Health Records and Statistics professionals at medical appointment counters, but will also increase user satisfaction by providing more efficient, comprehensive, and timely service, generating evidence applicable to similar contexts.

The program to strengthen specific job competencies is expected to have a significant effect (9%) on the perception of service quality and user satisfaction at the medical appointment counter.

DISCUSSION

Recent studies reveal that training programs have a significant impact on service quality and user satisfaction. A study conducted by Cervantes Macizo demonstrated a strong association (Spearman's coefficient of 0.755 and a significance level of 0.000) between the implementation of continuous improvement processes and the perception of service quality⁽¹⁶⁾. On the other hand, Shahnazi et al.⁽¹⁷⁾ demonstrated that the implementation of a training program significantly increases healthcare professionals' communication skills and self-efficacy, with a notable improvement in user satisfaction ($p < 0.001$).

Furthermore, Bernal Pedreros⁽¹⁸⁾ found that a well-structured training program enables healthcare personnel to significantly improve their ability to make informed decisions about resource allocation, which is essential for maintaining operational efficiency and service quality in primary care settings. Similarly, Alkahtani et al.⁽¹⁹⁾ demonstrated significant improvements, with increases from 77.2% to 96.5% in knowledge and perception scores, and from 73.8% to 92.5% in attitude scores, while the overall user experience improved from 62% to 72.4%.

Likewise, the effectiveness of these training programs is not limited to the healthcare setting. In a study conducted by Tarazona-Pimentel⁽²⁰⁾, it was observed that before the intervention, 42.7% of users were very dissatisfied with the services, while only 4.5% were satisfied. After the intervention, the percentage of satisfied users increased significantly to 40.4%, and dissatisfaction decreased to 1.1%. On the other hand, Licas Cardenas⁽²¹⁾ found that before the intervention, 100% of the experimental group had a low level of performance, but after the intervention, 76% reached an average level and 24% a high level. Meanwhile, in the control group, the changes were much less significant, with 72% remaining at low levels and no progress to a high level.

CONCLUSIONS

In this context, the results of this study will be applicable to improving the quality of institutional service, as it will provide a solid foundation for implementing training programs that strengthen the specific job competencies of REGES professionals. By applying these findings, an increase in operational efficiency, improved service quality and user satisfaction, and an optimization of available resources are expected, which will significantly contribute to the fulfillment of the institutional strategic objectives.

On the other hand, among the strengths of this study are its focus on a real and relevant problem, as well as the rigorous methodology for validating the training program and a robust statistical analysis plan that allows for an accurate evaluation of the results. However, the use of a convenience sample and the absence of a control group could limit the generalization of the results. Even so, the potential benefits will offer valuable recommendations for continuous service improvement.

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Conflicts of Interests:

The authors declare no conflicts of interest.

Author Contributions:

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Supplementary File (Open Data):

- [Cuestionario para medir las competencias laborales específicas.](#)
- [Cuestionario para medir la percepción de la calidad del servicio y satisfacción del usuario.](#)