

## 5S Program: implementation experience in a hospital pharmacy service in Campinas, São Paulo, Brazil

### Programa 5S: experiência de implantação em um serviço de farmácia hospitalar em Campinas, São Paulo, Brasil

Simone Yuriko Kameo<sup>1</sup> 

Larissa Saito da Costa Yoshida<sup>2</sup> 

Aline Antonioli de Barros Giovini<sup>3</sup> 

Aline Aparecida da Cruz Zanetti<sup>4</sup> 

Ricardo Barbosa Lima<sup>5</sup> 

<sup>1</sup>Universidade Federal de Sergipe (Lagarto). Sergipe, Brazil. simonekameo@hotmail.com

<sup>2,4</sup>Hospital da Mulher Prof. Dr. José Aristodemo Pinotti (Campinas). São Paulo, Brazil. Isaito@unicamp.br, alineba@unicamp.br, acruz@unicamp.br

<sup>5</sup>Corresponding author. Universidade de São Paulo (Ribeirão Preto). São Paulo, Brazil. ricardolimadentista@gmail.com

**ABSTRACT | OBJECTIVE:** To describe how the 5S Program was implemented in a hospital pharmacy service in Brazil. **MATERIALS AND METHODS:** It was an experience report on the improvement of total quality management in a hospital pharmacy service. After theoretical deepening and training, a group of employees carried out a situational analysis of the service and prepared a task plan, with deadlines and goals, according to the 5S Program fundamentals. **EXPERIENCE REPORT:** In terms of space, cleaner and more organized environments were provided with identification and optimization of workspaces. There was a reduction in waste and better control of inventories, from identification to storage in appropriate conditions. Among employees, the 5S Program implementation triggered professional motivation, improved hierarchical relationships, and developed a sense of leadership, collaboration, and teamwork, in addition to strengthening the link with the service and promoting collaborative management. In addition, the 5S Program furthered the identification and storage of medicines and supplies, contributing to the standardization of the pharmaceutical process, dispensing, and patient safety activities. **FINAL CONSIDERATIONS:** The 5S Program implementation positively modified the work process in the hospital pharmacy service.

**KEYWORDS:** Pharmacy Service, Hospital. Health Services Administration. Total Quality Management.

**RESUMO | OBJETIVO:** Descrever como o Programa 5S foi implementado em um serviço de farmácia hospitalar no Brasil. **MATERIAIS E MÉTODOS:** Consiste em um relato de experiência do aprimoramento da gestão da qualidade total em um serviço de farmácia hospitalar. Após aprofundamento teórico e treinamento, um grupo de colaboradores realizou uma análise situacional do serviço e elaborou um plano de tarefas, com prazos e metas, de acordo com os fundamentos do Programa 5S. **RELATO DE EXPERIÊNCIA:** Em relação ao espaço, foram proporcionados ambientes mais limpos e organizados, com identificação e otimização dos espaços de trabalho. Houve redução do desperdício e melhor controle dos estoques, desde a identificação até o armazenamento em condições adequadas. Entre os colaboradores, a implementação do Programa 5S desencadeou motivação profissional, melhoria da relação hierárquica e desenvolvimento do senso de liderança, colaboração e trabalho em equipe, além de fortalecer o vínculo com o serviço e promover uma gestão colaborativa. Além disso, o programa 5S favoreceu a identificação e o armazenamento de medicamentos e insumos, contribuindo com a uniformização das atividades de manipulação farmacêutica, dispensação e segurança dos pacientes. **CONSIDERAÇÕES FINAIS:** A implementação do Programa 5S modificou positivamente o processo de trabalho no serviço de farmácia hospitalar.

**PALAVRAS-CHAVE:** Serviço de Farmácia Hospitalar. Administração de Serviços de Saúde. Gestão da Qualidade Total.

## Introduction

The 5S Program (5S) is a methodology applied to the improvement of Total Quality, viable for any type of organization. The 5S emerged in Japan in the 1950s, used after World War II, aiming to reorganize the country during a period of crisis and competitiveness.<sup>1</sup> After the defeat, Japan invested in the industrial sector to recover its economy. As Japanese products were not well regarded before, industries resorted to strategies that made them competitive at the interface between price and quality. Hence, assertive management was needed to deal with waste, disorganization, lack of hygiene, dirt, and indiscipline in the organizations.<sup>1,2</sup>

Therefore, 5S was developed to face such problems in organizations during the post-war period in Japan. 5S was recognized worldwide, aiming to modify organizational processes through the optimization of use, order, cleanliness, health and discipline, commitment and participation of workers and others involved in the implementation of a quality improvement program.<sup>3</sup>

Given its effectiveness within organizations, 5S is considered one of the main quality and productivity management tools. Then, 5S must be approached in a macro way by organizations that intend to implement a quality and productivity management program because it allows the environment adaptation to receive profound changes, in addition to being easy to understand and apply, generating visible and immediate results.<sup>3,4</sup>

The 5S nomenclature is based on the five Japanese words that originally guide the method, adapted to the Portuguese language as five senses. Each sense represents a step in the program's methodology. The five senses are: S1, SEIRI, sense of use, in which the useful is separated from the useless, eliminating the unnecessary; S2, SEITON, sense of tidiness, in which the place is recognized and organized, allowing anyone to easily locate its resources; S3, SEISO, sense of cleanliness, in order to maintain a clean environment, eliminating sources of dirt and learning not to get dirty; S4, SEIKETSU, sense of health and hygiene, in which the work environment becomes favorable for health and hygiene; S5, SHITSUKE,

sense of self-discipline, applying these attitudes and methodology as a habit, transforming 5S into a way of life.<sup>5-7</sup>

In health services, the 5S methodology has been used to offer increasingly standardized and efficient assistance to users. Health services generally present themselves as complex and interdependent work environments among the sectors that integrate them. The amount of tasks performed throughout the day demands an efficient management system of the work process, focused on the well-being of its employees and continuous improvement of the quality of assistance offered to users. Previous experiences demonstrate how 5S can be used in healthcare organizations.<sup>7-9</sup> At last, given the relevance and potential of the 5S Program within organizations, the objective of this experience report is to describe how 5S was applied in a hospital pharmacy service in Brazil, considering the scarcity of literature on the 5S method applied specifically in this type of health service.

## Materials and Methods

This is an experience report based on the experience of researchers in the implementation of the 5S Program in a hospital pharmacy service linked to a women's health care hospital in Campinas, São Paulo, Brazil. The 5S implementation process took place in 2021, from January 20 to May 31, after the researchers participated in training on the Program, promoted by the Japan International Cooperation Agency (JICA) and TA Networking Corporation, including the study of the method and its applicability.

The implementation of 5S was based on the situational analysis of the service by the researchers who work in it, in addition to planning and evaluating the measures implemented. The study place, in which the hospital pharmacy service operates, provides health care by the Brazilian Sistema Único de Saúde - SUS (Unified Health System), being public and free to its users. As a university hospital specializing in women's health, it assists medium and high complexity in the fields of obstetrics, gynecology, oncology, and neonatology, with 134 hospital beds, six of which are in the Intensive Care Unit (ICU) for adults and 15 for newborns.

## Experience report

### Situational Analysis

In the situational analysis, the hospital pharmacy service was the place chosen as a pilot for the implementation of the 5S program because it is an environment in which there was a need to optimize space, refinement of inventory control and medication expiration dates, as well as continuous improvements to increase patient safety in the medication handling and dispensing process. All spaces of this service were included in the situational analysis.

The medication prescription system is electronic for patients hospitalized in the wards, emergency care, ICUs, and in the oncology outpatient clinic (chemotherapeutic prescriptions). In the other outpatient clinics, the prescription is manual. The hospital pharmacy service works uninterrupted throughout the week, with six pharmacists, two of whom are supervisors and one is a director, in addition to a secretary, an administrative collaborator, and 18 pharmacy technicians. Pharmacists are allocated to fixed sectors, while a part of pharmacy technicians are also permanent, and others rotate among the sectors.

The physical spaces of the sector include a pantry for staff meals, secretary, central pharmacy, satellite chemotherapy pharmacy, satellite surgical center pharmacy, sanitizing laboratory, and laboratory for handling oral solutions. The main activities carried out include drug dispensing, clinical pharmacy, and pharmaceutical care<sup>10,11</sup> involving the manipulation and fractionation of injectable chemotherapeutics, oral solutions, sanitizing agents, and inventory control and medication expiration dates.

Within the hospital pharmacy service, after an assessment of the situation, the following items were eligible for intervention and quality improvement: (1) storage space and drug dispensing, (2) handling and fractionation of injectable chemotherapeutics, oral or sanitizing solutions, and (3) inventory control and medication expiration date.

### 5S Program implementation

In view of this scenario, and after the training and meetings together, a didactic material on 5S Program was prepared. The director, supervisors, and one of the pharmacy technicians prepared a presentation and a group dynamic that lasted approximately 30 minutes for the workers of the pharmacy service, aiming to introduce 5S Program and acquaint them with the methodology to be applied. The dissemination of material and guidelines on the 5S Program was carried out with presentations in small groups, as the hospital pharmacy service operated 24 hours a day, in the morning, afternoon, and evening.

The participants were separated into working pairs or trios, and an execution schedule was released with the dates for carrying out the first four stages of the 5S Program – SEIRI, SEITON, SEISOU, and SEIKETSU –, in addition to the indication of the place to apply, period and people responsible for the steps. After this organization, S1, S2, S3, and S4 were performed, according to Figure 1, from January 22 to 28, 2021, in all sectors of the hospital pharmacy. Unnecessary items were discarded (SEIRI), and the cleaning of storage locations was carried out during the organization process (SEISOU).

**Figure 1.** Implementation of the 5S Program, with before (green) and after (blue) views of the stored materials (A and C) and the ladder (B) (Campinas, São Paulo, Brazil, 2021)



Source: authors collection.

Items such as the ladder (Figure 1B), which were blocking the team's passage or hindering the flow within the storage, were organized. By the 5S Program, items were relocated in specific spaces with identification tags for fixed location determination (SEITON). Hence, the safety of the work environment was improved, avoiding accidents caused by tripping and falling and facilitating the flow of people and materials in that area.

S2 was also performed where partitions with adhesive tapes for zoning were allocated, in addition to S3, in which the cleaning of storage places was done during the organization process. Boxes that were blocking the way were relocated to specific spaces with an identification tag for fixed location determination. The heaviest boxes were stored on medium-height shelves to facilitate carrying them when needed. Consequently, the work environment safety was improved, reducing the risk of accidents at work, and preventing occupational diseases due to improper ergonomics.

Figures 2 and 3 demonstrate the application of the 5S in the central pharmacy. Figure 2A shows the shelf for storing documents and disposal boxes for sharps and chemical materials/drugs stored before and after 5S implementation. The useless materials (styrofoam boxes and plastic boxes) were removed to free up space and facilitate the cleaning of the place. In Figure 2B, it is possible to observe that drugs with different concentrations and equal volumes began to be stored in physically distant locations, optimizing the process to reduce errors and facilitate access. Although the hospital has an electronic prescribing system, safety barriers were not implemented for different concentrations of the same drug before 5S implementation. Thus, a drug with different concentrations and equal volumes was stored in distant locations and with identification of indication of adult or neonatal use to prevent dispensing errors.

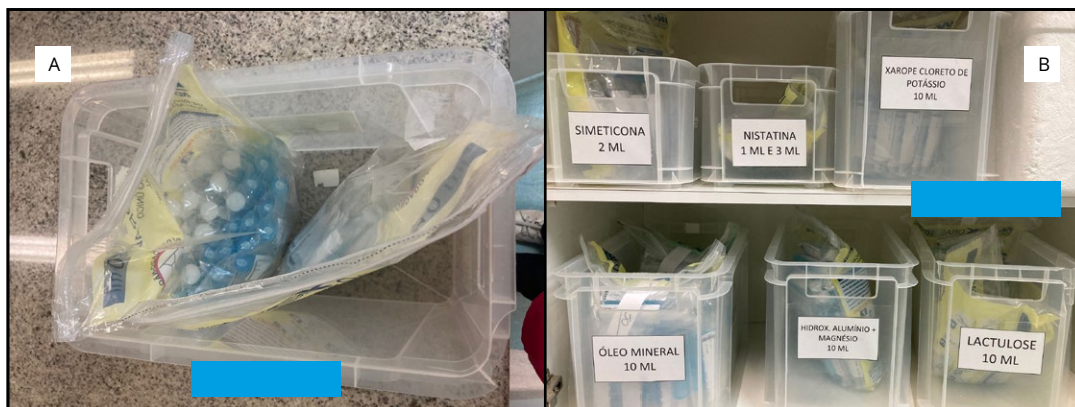
**Figure 2.** Implementation of the 5S Program, with before (green) and after (blue) views at the central pharmacy, both on the shelf to store discard boxes (A) and in the storage of medicines (B) (Campinas, São Paulo, Brazil, 2021)



Source: authors collection.

In Figure 3A, it is observed that oral dispensers with identical volumes but containing different drugs were stored in plastic boxes with large and visible identification instead of plastic bags. This change provided a lower chance of different drugs mixing up by mistake during storage. Figure 3B shows the application of labels to identify drug bins by name and therapeutic class, with the definition of minimum and maximum quantities. Thus, excesses or shortages in the storage started to be avoided.

**Figure 3.** Implementation of the 5S Program, with after (blue) views at the central pharmacy, organizing oral dispensers (A) and applying identification labels (B) (Campinas, São Paulo, Brazil, 2021)



Source: authors collection.

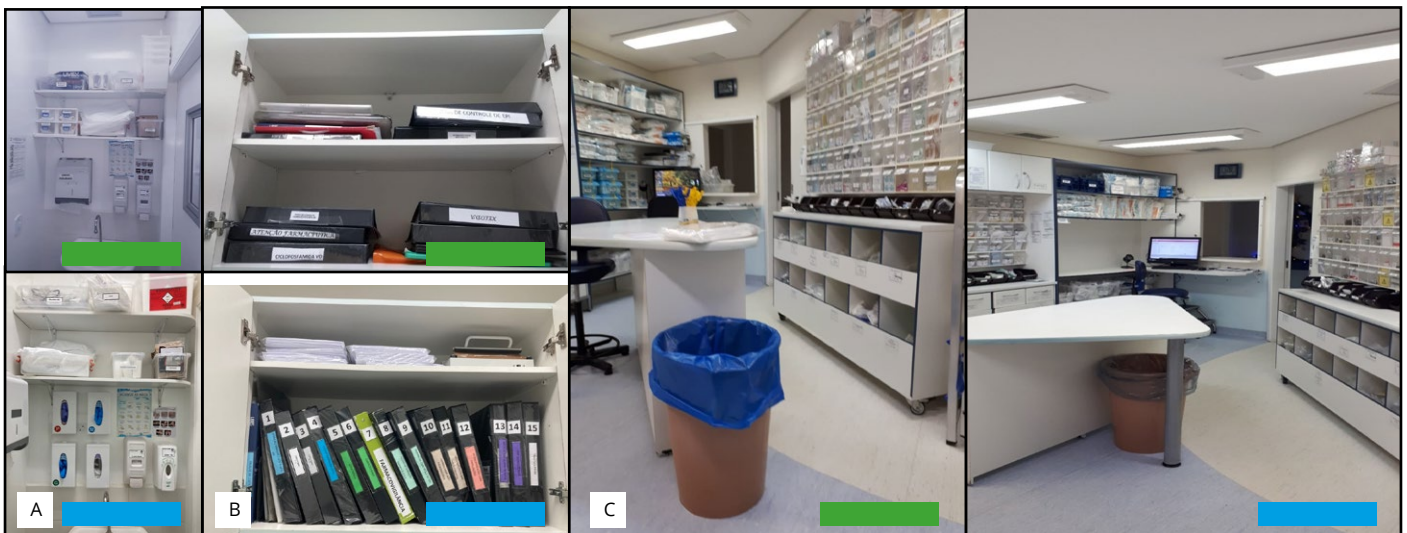
Figure 4 shows the organization in the sanitizing laboratory of the hospital pharmacy service. There was space management, removing excess items from stock and reorganizing the others, in addition to inserting identification tags and removing items that were not needed in this space. Lastly, Figure 5 shows the organization of the chemotherapy satellite pharmacy and the surgical center satellite pharmacy. At the chemotherapy satellite pharmacy, shelves were reorganized and document folders numbered. Then, the location of each one remains fixed, making identification easier. The shelves were reorganized, and personal protective equipment (gloves and caps) was made available to facilitate use. In the surgical center's satellite pharmacy, excess surgical kits were removed (next to the computer, in the background), and the furniture was relocated to allow free passage and reduce the risk of accidents caused by falls.

Figure 4. Implementation of the 5S Program, with before (green) and after (blue) views in the sanitizing laboratory (Campinas, São Paulo, Brazil, 2021)



Source: authors collection.

Figure 5. Implementation of the 5S Program, with before (green) and after views (blue) at the chemotherapy satellite pharmacy (A and B) and the surgical center satellite pharmacy (C) (Campinas, São Paulo, Brazil, 2021)



Source: authors collection.

Observing the experience, it is important to consider that the implementation of the 5S Program in health services is closely linked with the perception and performance of its employees about it, such as managers and assistance professionals, as well as support personnel and general services. The perspective of the 5S Program is of continuous and lasting improvement of the organizations. Not only producing occasional changes in services but also offering the ability for its employees to be able to apply it daily, contributing to the improvement of Total Quality, which translated into better working conditions, optimized workflows, personal satisfaction, collaborative capacity, and lower risk of errors or accidents during the working period. However, it is necessary that systematic investigations aim to produce evidence for the standardization of its implementation in health services, as well as to develop real criteria about its quality after the implementation of the program.<sup>12,13</sup>

Evidence already pointed to the use of the 5S Program in a hospital context, demonstrating that most of health professionals noticed significant and positive changes in work processes and resource management, demonstrating that they were satisfied with the intervention.<sup>14</sup> The 5S implementation process also corroborates the current perspectives of health management, aiming to make health care increasingly resolute according to the demands required in each health service.<sup>15</sup>

In hospital pharmacies, management is an essential tool for service operation. Due to the constant use of medicines and pharmaceutical specialties in these institutions, it is necessary to manage a large volume of information, collaborators, storage control, and perform pharmaceutical handling and dispensing services, in addition to clinical pharmacy activities. It is necessary to deal with issues related to workflow, storage, and effective communication, making the hospital pharmacy a work environment that can demand high effort from its employees to ensure adequate health care. Therefore, there is a need for articulated actions in which the reorganization of the workflow takes place, practices and routines are unified, and activities are standardized.<sup>16,17</sup>

Starting from Pharmacy, the literature corroborates the applicability of the 5S Program in other sectors of health services, especially those aimed at direct patient care, involving Nursing and the systematization of care related to the practice of this career. In addition to improving aspects related to the environment, the 5S Program can result in direct impacts on the user's experience and satisfaction with the care received by health services. The nurse, who often articulates professional care and management activities, can use this tool to incorporate management routines and processes that promote Total Quality improvement without spending many resources to be applicable, reinforcing the need for nurses, as well as pharmacists, to adapt to the methods.<sup>12,18-20</sup>

From the perspective of the actors, the actions implemented had positive impacts on the hospital pharmacy service, such as cleaner and more organized spaces, waste reduction, employee motivation, flexibility in the relationship between management and the work team, collaboration capacity, raising

employee morale and greater commitment to the health organization. It was noticed that the involvement of employees was mostly achieved by the motivation to change the work environment rather than by duty, resulting in a quality workspace with participatory management. In this sense, the gap arises as to how quality management can influence the way health professionals act, in search of efficiency and effectiveness in their work processes.

## Final considerations

The implementation of the 5S Program in the hospital pharmacy service was a valuable tool to improve the management and quality of the health care offered, carried out from the perspective of its employees. The demand for financial resources to implement it was low, making the intervention viable. In addition, the participation of employees in the situational analysis was a significant step in identifying the weaknesses of the service, using 5S in a targeted way to strengthen them.

## Authors' contribution

Kameo SY, Yoshida LSC, Giovini AAB, and Zanetti AAC participated in the conception of the experience report, application of the method, acquisition, and critical analysis of data. Lima RB participated in the critical analysis of data and writing of the manuscript. Kameo SY collaborated in writing and revising the initial version of the manuscript. All authors reviewed and approved the final version submitted.

## Conflicts of interest

Yoshida LSC, Giovani AAB, and Zanetti AAC are pharmacists from the hospital pharmacy service in which the 5S Program was implemented. Kameo SY and Lima RB do not have any relationship or conflict of interest to declare.

## Indexers

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