



Impact of Applying 5S Management Method on Clients' Satisfaction in Healthcare Centers' Services

ARTICLE INFO

Article Type

Original Research

Authors

Shahali Sh.^{*1} PhD,
Khajehasani M.² MSc,
Torabipoor A.³ PhD,
Ahmadi Angali K.³ PhD

How to cite this article

Shahali Sh, Khajehasani M, Torabipoor A, Ahmadi Angali K. Impact of Applying 5S Management Method on Clients' Satisfaction in Healthcare Centers' Services. Health Education and Health Promotion. 2020;8(4):197-202.

ABSTRACT

Aims This study aimed to investigate the effect of the 5S intervention program on the clients' satisfaction in healthcare centers' services.

Materials & Methods This quasi-experimental study was done with 220 pregnant women at a health center in Ahvaz in 2018. The quality gap and weaknesses were measured before the 5S implementation using the adornment system (5S) checklist and SERVQUAL questionnaire. Interventions were designed and implemented concerning the system weaknesses, and the next evaluation was carried out two months after the intervention. SPSS.21 software was used for data analysis. Data were analyzed using paired t-test and descriptive statistics.

Findings The 5S score was 2.4 before the 5S implementation and 4.2 after the intervention. The study revealed that although the average score of expectations of the Ahvaz community health center's clients is higher than their perception, the 5S implementation has decreased the gap, and in general, in the studied center, the provided service quality is still less than the center clients' expectations.

Conclusion Implementation of 5S can improve the work environment adornment and the satisfaction of health centers' clients.

Keywords Patient Satisfaction; Quality of Health Care; Quality Improvement

¹Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran

²Department of Midwifery, Reproductive Health Promotion Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

³School of Health, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

*Correspondence

Address: Department of Reproductive Health and Midwifery, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.
Phone: +98 (21) 82883811
Fax: : +98 (21) 82884555
shadab.shahali@modares.ac.ir

Article History

Received: October 3, 2020

Accepted: November 28, 2020

ePublished: April 04, 2021

CITATION LINKS

[1] TQM implementation for the healthcare sector: The relevance ... [2] Successfully implementing total quality management tools within ... [3] Hospital services quality assessment: Hospitals of Kerman University of Medical ... [4] Cross cultural adaptation and assessing validity and reliability of ... [5] Return on marketing: Using customer ... [6] An integrated framework for quality in education: Application of quality ... [7] Implementation of 5S management method for lean healthcare at a health center ... [8] The 5S methodology as a tool for improving ... [9] Impact of the Japanese 5S management method on ... [10] Deployment management experience of 5S in the ... [11] The feasibility study of implementation of "5s" ... [12] Designing applied model for managerial technique 5S ... [13] The effects of 5S model on hospital services in Imam Reza ... [14] Lean hospitals: Improving quality, patient safety ... [15] Implementation of the 5S model as a source to ... [16] The quality of health care services provided ... [17] Visual workplace audit ... [18] Process implementation through 5S ... [19] Implementation of the 5S quality control management scheme ... [20] The effect of 5S-continuous quality improvement ... [21] Quality gap in primary health care services in Isfahan ... [22] Establishment of symmetry system (5S) in work environment ... [23] Application of Lean methodology for improved quality ... [24] Establishment of workplace organizing system, 5s, in ... [25] Lean service implementation in hospital: A case study conducted ... [26] Application of lean methods improves surgical clinic ... [27] Survey on quality gap in primary health care in ... [28] Measuring service quality in a hospital colposcopy ...

Introduction

High-quality health care is the level of health services provided to individuals and communities that improve the probability of health care results [1]. Patients' satisfaction is a necessary condition for quality definition [2]. Considering the importance of patient satisfaction of services in the provided services' effectiveness and quality, the patients' satisfaction index plays an important role in increasing the efficiency of the organization's performance [3, 4]. Quality of service is, in fact, a kind of patients' judgment, based on their perceptions of the service receiving process [5] and if the expectations are more than the perceptions, the service quality that the patient receives is low in his opinion and leads to dissatisfaction [6]. Many organizations are looking to achieve a competitive advantage in today's changing world and differentiate their products and services from other organizations. One of the available strategies to meet this is to raise the quality of services and products and promote productivity. This brings about the need for managerial and scientific tools and techniques. One of the strategies to improve service quality is the 5S (Seiri, Seiton, Seisou, Seiketsu, Shitsuke) management model and other related techniques. Today, 5S is a key management tool [7]. 5S, originally developed by Hiroyuki Hirano, stands for the five Japanese words Seiri, Seiton, Seiso, Seiketsu, and Shitsuke, which are often translated into English as "sort, set in order, shine, standardize, and sustain". These bases include Seiri (to separate necessary tools, equipment, and materials from unnecessary materials and remove them in the next stages), Seiton (to arrange and identify parts and tools for easy use), Seisou (careful cleaning of each part), Seiketsu (standardization to manage the previous three steps repeatedly and to maintain the work environment under available conditions) and Shitsuke (continuing to shape habits to follow the first four S) [8, 9]. Daiani [10], and Tafreshi & Safavi [11] have demonstrated that the adornment system implementation, concerning its simplicity and the useful and beneficial results, is necessary for any applicable small and large scale organization, and the management approach of 5S decreases the waste by improving the work environment and visual management organization. Nouri *et al.* and Karami *et al.* stated that this strategy would create and maintain a work environment in a suitable, clean, and effective organization [12, 13]. The major aim of implementing 5S in organizations is to provide the best possible care to the patient with the most effective method [14]. Of course, each country's role and culture is undeniable, providing more dynamicity and a more capable field for implementing management designs. Furthermore, senior managers' belief in this system's ability to improve performance and

increase productivity is a sure guarantee for the organization's success [15]. Studies have shown that paying attention to features and interventions in the workplace to improve service providers' work environment effectively promotes the care of patients [13, 15, 16]. However, in Iran, there are few studies on the benefits of using this technique in health centers and hospitals [12, 13], and there is no study to examine the effect of this method on the satisfaction of patients with the service quality.

In the Iranian health system, community health centers are first-level health centers with vaccination facilities, mental health care, family health care, nutritional care, doctor units, and services at these centers. Concerning the categorization of community-based health centers as a place for providing primary preventive services, process and equipment complications and availability of a vast domain of guidelines, instructions, and forms, and the lack of proper physical space, lack of fast access to documents, evidence and records and the possibility of increasing costs for reasons such as rework and the need for quality promotion in the health sector in terms of service type, as well as the lack of efficient attention paid to the implementation of 5S in these centers and the lack of many studies in this field, this research was aimed at studying the effect of the implementation of the 5S management method on pregnant women because most centers' clients are pregnant women.

Material and Methods

This is a quasi-experimental study that was carried out with the participation of all the Ahvaz Health Care Center personnel (n=15) and 220 pregnant women referred there in March to December, 2018. A sample size of 220 pregnant women was considered sufficient to obtain a power of 80% ($\alpha=0.05$, $1-\beta=0.08$) with a significance level of 5% and effect size 0.19, and critical t of 1.97 in service quality. Sampling was done using a convenience sampling method. All eligible pregnant women over the age of 18 who were under the support of this center and did not have any history of mental diseases and received care at least twice at the health care center were enrolled in the study. Exclusion criteria was reluctance to participate in the study.

Data were collected with the use of two questionnaires; Demographic, SERVQUAL, and 5S audit checklist. SERVQUAL examines five service quality dimensions (Reliability, Responsiveness, Assurance, Empathy, and Tangible) with 22 questions. To determine the quality gap, the clients' score on the health service quality's existing status (their perception of the provided service quality) compares with their score on their desired status of health service quality (their expectation of service

quality). The resultant score, if positive, showed that the provided services are more than the customer's expectations, and if negative, it showed that the provided services do not meet the clients' expectations, and the quality gap is negative. If the resultant score was equal to zero, it showed a lack of quality gap and indicated that the health care service provided to the clients is what they expected. Scoring performs using a 5-point Likert scale (very low=1 to very high=5), and the gap between the difference in perception and expectation of outpatients is obtained. The validity and reliability of the SERVQUAL questionnaire were studied in Heidarnia *et al.*; Cronbach's alpha coefficients were higher than the recommended level of 0.7 [4]. 5S audit checklist was used to determine the present status of selected units before and after the research in terms of adornment [17-18]. The acceptable audit score in this checklist is 4.2 [12]. To determine the content validity of this checklist, the Lawshe method was used with 11 experts commenting. Content validity for the 5S audit checklist in Healthcare Centers' Services was 0.81, which is acceptable for 11 specialists (0.59) according to the minimum acceptable amount of Lawshe.

The study had an ethical code from Ahvaz Jundishapur University of Medical Sciences. The 5S audit checklist for the units' workplace, such as family health unit, doctor's room and nutrition specialist unit was completed by the researcher before the intervention. The assessment of the 5S intervention's impact was focused on the client's satisfaction levels after visiting the health centers. The training sessions of the 5S management system were held in four 1-hour sessions in the morning at the health center's principal room attended by colleagues involved in the 5S implementation process. The research plan aims, the necessity of this design implementation, and the project's benefits were expressed in the session. Then, in an 8-hour workshop, the principles and step by step method of implementing the 5S work environment organization technique, the concepts, and the way of implementing 5S in community health centers were taught to personnel employed at center No. 4 west of Ahvaz by an assistant professor of healthcare

services management. The 5S implementation instruction manual was provided to the for pregnant women. 2 months after the intervention, written consent had been obtained from all of them after introducing the research to pregnant women, and they had been informed about anonymity and confidentiality during data processing and their right to withdraw from this study at any time. The SERVQUAL and 5S audit checklists were completed by pregnant women face to face before and two months after the intervention. The pregnant women did not know what kind of intervention would be done, and their answers were unbiased.

SPSS 21 software was used for data analysis and statistical operations. To provide descriptive statistics, distribution of central indicators and dispersion, frequency, mean \pm SD were used. Paired t-test was used before and after the intervention to compare the mean \pm SD and find the effect of 5S implementation on patient satisfaction.

Findings

The number of pregnant women who participated in the study was 200. The mean age of the participants was 29.7 \pm 6.2 years. 20% (44 people) did not have a diploma degree, 30.9% (68 people) had diplomas, 10.5% (23 persons) had undergraduate degrees, 33.6% (74 persons) had a bachelor's degree, and 11 people (5%) had master's degrees and over. 83.3% were housewives, and 28% were employees. 28.6% had come for prenatal care, 39.1% had received nutrition counseling and were under a doctor's care besides prenatal care, and 29.1% received prenatal care and were under a doctor's care.

The mean score of the selected units' workplace adornment before implementing 5S was 2.4, and the audit score of units after the implementation of 5S was 4.2. According to the findings, performing the 5S adornment system was effective and increased the audit score. Given the acceptable score of the 5S audit based on the checklist, the health center's status was favorable after implementing 5S.

Before the 5S management method implementation, the quality gap was more than other factors in the dimensions of reliability -6, Empathy -4.4, Tangibles -3.5 score (Table 1).

Table 1) Mean \pm SD scores of participants' perceptions, expectations, and quality gap by different dimensions from clients' point of view

Dimension	Before intervention			After intervention			p-value
	Expectations	Perceptions	Gap Score (Perceptions-Expectations)	Expectations	Perceptions	Gap Score (Perceptions - Expectations)	
Tangibles	19.50 \pm 1.0	15.97 \pm 2.2	-3.5	19.49 \pm 0.9	15.96 \pm 2.1	-3.5	>0.05
Reliability	24.2 \pm 1.5	18.19 \pm 2.1	-6.0	24.14 \pm 1.3	21.84 \pm 2.3	-2.3	< 0.001
Responsiveness	21.8 \pm 2.3	19.38 \pm 1.3	-2.4	19.56 \pm 2.9	15.97 \pm 2.0	-3.5	< 0.001
Assurance	19.38 \pm 1.3	15.99 \pm 2.2	-3.3	19.34 \pm 1.0	15.99 \pm 2.1	-3.3	>0.05
Empathy	24.20 \pm 1.6	19.8 \pm 2.9	-4.4	24.20 \pm 1.2	20.59 \pm 3.3	-3.3	< 0.001
Overall	21.81 \pm 6.6	17.86 \pm 11.7	-19.6	21.34 \pm 7.5	18.07 \pm 12.1	-15.9	< 0.001

In general, the quality of services provided in the studied center was negative in all dimensions of quality gap score based on gap analysis after 5S adornment system implementation, but the gap was very low in the dimension of reliability (-2.3). Respectively Quality gap was more than other factors in the dimension of tangibles (-3.5), assurance, and empathy (-3.3).

The study revealed that although the average score of expectations of the Ahvaz community health center's clients is higher than their perception, the 5S implementation has decreased the gap, and in general, in the studied center, the provided service quality is still less than the center clients expectations.

Discussion

The findings showed that the 5S implementation significantly changed the service quality and the family health unit, nutrition unit, physician's office. This showed the positive impact of 5S implementation on the selected units (family health, nutrition unit, physician's office). The comparison before and after implementing 5S in the community health center, which includes (organization, arrangement, standardization, and discipline), also significantly changed.

Our study's findings were similar to Nouri *et al.*, which show that the 5S audit score in the operating room before implementing this technique was 3.2 and after the implementation of the technique was 4.6 score [12]. In line with our research, Nana *et al.* also concluded that the results of the 5S implementation seem to be satisfactory [19].

The present study also indicated that although after implementing the 5S management method, the quality of provided services was still less than the clients' expectations, 5S implementation had decreased the quality gap from the clients' perspective in all studied fields. The results were similar to the Tak *et al.* study, which indicated that the 5S implementation effectively raises staff incentive, decreases the waiting time, and satisfies clients from health services [20]. Sharifirad *et al.* showed that there is still much room for improvement and reformation of the existing gap between clients' expectations and perceptions. Consequently, using quality promotion methods can help conduct some measures to improve and reform this gap [21].

The present study showed that the 5S, as a management tool or a model for implementing service quality promotion, does not cost a lot and is easily implemented. Bakhshinik has found that this model had a great impact on resource development. In that study, it was found that using proper methods in carrying out determined activities effectively led to productivity in related sectors, and it was concluded that using them will have positive

effects on the other systems needed by the organization [22]. Farrokhi *et al.*, implementing the 5S project in the Operating Room, concluded that 5S should be used as a simple tool in the first step toward quality management activities, improving quality at a lower cost [23]. Rexhepi *et al.* and Waldhausen *et al.* concluded that training and implementation of the 5S workplace organization technique in hospitals demonstrated that this technique implementation improves environmental factors such as workplace cleanliness, fast and easy access to the essentials as well as a pleasant workplace for staff [25, 26].

In this study, the best dimension of service quality (the smallest gap), observed after the 5S implementation, was responsiveness. In the study of Kebriaei *et al.*, the highest mean gap was in the responsiveness dimension [27], and in the study of Wisniewski and Wisniewski, it was in the dimension of reliability [28].

Given that only service recipients in the health center were studied, this study's results cannot be generalized to other service provision fields in the healthcare system and other organizations. In this case, they are expected to adopt a model with a higher degree of compliance to the center conditions and more effectively promote the service quality and provide services with quality beyond the recipients' expectations besides eliminating weak points.

The negative scores of the service quality observed in this study show that service providers are weaker in these dimensions. Therefore, the need to improve primary health service quality means that managers must use management tools and methods such as the 5S implementation, decrease the negative scores and bring perceptions as close as possible to expectations and promote clients' satisfaction from the received services by executing and planning appropriately.

According to this study's findings, to continuously promote and evaluate the service quality, efforts should be made to decrease the service quality difference in plans. Centers must be equipped with efficient and new tools and provide services in the promised and shortest time; staff and service providers should be available at the time of patient referral, get acquainted with modern knowledge and skills to respond to the clients' needs and understand the clients' values and emotions. On the other hand, given the fact that the greatest difference in the service quality was seen in the responsiveness dimension, it is necessary to allocate funds to the health centers to provide the equipment, more attention should be given to staff responsibility in the plans and their commitment to the responsibilities taking into consideration the cultural features of the country so that clients can be more relaxed and satisfied.

Conclusion

According to the results of this study, we can conclude that implementing the 5S management method in healthcare centers effectively uses resources and promotes service quality effectively. This issue can reduce the quality gap with senior managers' support and the development of training in the dimension of participation attraction and attitudes promotion.

Acknowledgments: The authors sincerely appreciate all clients and health care providers who helped us carry out this study.

Ethical Permissions: The study had an ethical code IR.AJUMS.REC.1395.801 from Ahvaz Jundishapur University of Medical Sciences.

Conflict of Interests: The authors declared no competing of interest.

Authors' Contributions: Shahali Sh. (First author), Introduction author/Methodologist/Original researcher/Discussion author (70%); Khajeheasani M. (Second author), Introduction author/Original researcher/Discussion author (10%); Torabipoor A. (Third author), Introduction author/Original researcher/Discussion author (10%); Ahmadi Angali K. (Fourth author), Introduction author/Original researcher/Discussion author (10%).

Funding/Sources: The research was funded by the Reproductive Health promotion Research Center, Ahvaz Jundishapur University of Medical Sciences. The funding body only has evaluated the design of the study and did not influence the study development, or preparation of the manuscript, or other actions which subsequently carried out.

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