



The role of pharmacists at the implementation of transformational leadership in the hospital central sterilization

Dwi Agung Nugroho^{1*}, Aris Perdana Kusuma²

¹ Faculty of Pharmacy, Universitas Airlangga, Surabaya, Indonesia

² Department of Pharmacy, Universitas Islam Indonesia, Yogyakarta, Indonesia

*Corresponding author: dwiagung.apt@gmail.com

Abstract

Background: Pharmacists in hospitals have a role that is not only limited to the pharmacy installation and management but also contributes to the *Central Sterile Supply Department* (CSSD) installation. The issue of sterilization and cleanliness of instruments and linen in hospitals is the responsibility of the CSSD to support the sustainability of quality services in hospitals. Although related to sterility, most of the staff of the installation CSSD in Indonesia are high school graduates with minimal health knowledge and are often transferred from other installations due to problems. Some hospitals combine CSSD with laundry; in contrast to the pharmacy installation, which actively involves pharmacists and pharmaceutical technical personnel, compliance with regulations and provisions is more highly respected compared to personnel in the CSSD installation.

Objective: This study aims to analyze the application of transformational leadership style in CSSD installation in hospitals, while highlighting the lack of leadership studies in pharmacy and the effectiveness of leadership in managing installation performance in hospitals with non-health personnel.

Methods: The methods used include direct observation, interviews, and questionnaires with samples consisting of installation leaders and staff CSSD in hospitals. We explore the factors influencing and challenges faced in implementing transformational leadership in a hospital CSSD environment.

Results: The questionnaire results showed that the transformational leadership scores of the leaders were high, and most employees were satisfied with the implementation of transformational leadership. Some management concepts have been applied to improve performance, but many have not been able to provide change due to a lack of response from employees.

Conclusion: A leader in CSSD installation must be flexible in adopting a leadership style that suits the situation and conditions; the application of leadership style must consider internal factors such as human resources quality and organizational structure as well as external factors that are hospital management and budget support.

Keywords: Leadership style, transformational leadership, hospital central sterilization and laundry, health service management

1. Introduction

The role of pharmacists in hospitals can be in the management section, pharmacy installation, Central Sterile Supply Department (CSSD) installation and other installations related to the pharmaceutical profession. Pharmacists in hospitals can play a structural or functional role so that pharmacists can be placed outside the pharmacy installation. In addition to the Minister of Health Regulation Number 72 of year 2016 of Minister of Health (2016) concerning Hospital Service Standards, the functional position of pharmacists in hospitals is regulated in Minister of State Apparatus Utilization and Bureaucratic Reform Regulation Number 13 of 2021, elements of the pharmacist functional position task activities that can be assessed for credit points include preparation of pharmacy practice plans; management of pharmaceutical preparations, medical

devices, and BMHP; clinical pharmacy services; central sterilization; application of pharmaco-economic studies and clinical trials; and special pharmacy services.

As for other health workers, there is no description for their functional positions in the CSSD. Pharmacists in CSSD installations usually act as leaders, furthermore in some hospitals, due to interrelated work activities, CSSD installations are often combined into one installation with hospital laundry. According to Hospital Sterilization Center Installation Guidelines of Ministry of Health of the Republic of Indonesia (2009) and PPSSI (2023), the CSSD leadership standard is filled by health workers while the laundry is filled by non-health workers Holdford (2018) stated that most pharmacy textbooks do not address the topic of leadership or only mention it briefly.

Six basic leadership styles that can be applied to change work situations have been identified: coercive, transformational, affiliative, democratic, pacesetter, and coach (Goleman, 2000). Six styles of leadership proposed by Goleman, Goleman's description of leadership types according to Cwalina & Drzewiecka (2015) is described in **Table 1** as follows:

Table 1. Six types of leadership styles

Leadership style	Main characteristics	The style in phrase
Coercive	Demands immediate compliance, has overall negative impact on climate in organization, works good in time of crisis or in case of problems with workers	“Do, what I tell you”
Authoritative	Mobilizes people toward vision, works especially well, if new vision or new direction is required	“Come with me”
Affiliative	Concentrates on harmony and builds emotional bonds, works well, when people face difficult circumstances	“People come first”
Democratic	Forges consensus through participation and works successfully, if there is a need to build buy-in or in consensus, or to get input from valuable team members	“What do you think”
Pacesetting	Style sets high standards for performance, works effectively with motivated and competent people, knowing, how to get quick results from them	“Do it, as I do, now”
Coaching	Develop people for future, works especially well if there is a need to help others improving performance or setting long term strengths	“Try this”

Source: Cwalina & Drzewiecka, 2015

Bass (1985) divides leadership into two types, namely transformational leadership and transactional leadership. Bass argues that transformational leadership is more effective than transactional leadership in terms of the greater contribution of transformational leaders in motivating group members compared to transactional leaders. Compared to subordinates, transformational leaders provide greater satisfaction than transactional leaders because subordinates not only need to be paid after completing the work, but they also need attention, intellectual stimulation, and advice obtained from their leaders (Bass and Avolio 1993).

According to Sethibe and Steyn (2015), leadership style has been recognized as one of the most important factors influencing the relationship between innovation and organizational

performance, because leaders have the authority to set specific goals and encourage innovation. Eliyana *et al.* (2020) stated that to realize innovative work behavior in employees, assistance from a leader is certainly needed, especially a leader with a transformational leadership style. Transformational leadership is believed to be one of the main driving factors for employees to be able to innovate. This is because in general leaders with this leadership style have an open mind and are always oriented towards future planning, so that employees are definitely encouraged to be more innovative in their work.

Sterility and cleanliness of medical devices and linen in hospitals are the main things to support the sustainability of hospital quality, on the other hand, most of the human resources employed in this field are employees with minimal knowledge about health and are often considered a waste of other installations in the hospital. In contrast to the pharmaceutical installation which plays a large role as a pharmacist, order and compliance with the rules are more highly respected than in the CSSD installation. This is the background of this study, in addition to implying it also confirms that there has been no research on leadership in pharmaceutical research and the effectiveness of leaders in managing the performance of installations consisting of other health workers. This basis then triggered the need for research on the transformational leadership of the head of the CSSD installation and laundry. Therefore, this study aims to analyze the application of transformational leadership in the CSSD installation and hospital laundry and its impact on the performance and job satisfaction of officers.

2. Method

2.1. Sample preparation

This study was conducted on the leaders and employees of the CSSD installation which is one with the laundry (1 Administrative Staff and 19 Executive Staff) in one of the government hospitals with type B education in East Java, Indonesia, which has capable employees and sophisticated sterilization equipment, with a number of patient beds of 300 beds and an operating room with 20-25 patients every day. The inclusion criteria for this study were the head of CSSD and laundry installations and their staff who filled out the questionnaire form, while the exclusion criteria were employees who were on leave or sick.

2.2. Method

The type of research used is qualitative descriptive. Data collection techniques using interviews, observations and questionnaire. Observations will be recorded and analyzed to see

patterns of leadership practices. Interviews with leaders and staff will be recorded and translated to gain in-depth insights into the experiences and views of respondents. MLQ (Multifactor Leadership Questionnaire) in accordance with Bass's transformational questionnaire (1985) is used to measure the implementation of transformational leadership. The questionnaire consists of 36 questions with answers in the form of a Likert scale.

The questionnaire used is The LMX (Leader-Member Exchange) questionnaire is used to measure the relationship between leaders and subordinates. There have been many standard instruments used in measuring LMX, one of which is the LMX-MDM for leaders and followers developed by Liden & Maslyn (1998). This instrument applies the dyadic concept by analyzing not only the leader's perspective but also the follower's perspective. To determine the quality of LMX in CSSD and laundry installation, the leader respondents (head of installation) assessed the quality of their relationship with members (government employees and contract employees) and vice versa according to the LMX questionnaire, namely 12 specific questions for leaders and 12 specific questions for members with answers in the form of a Likert scale.

2.3. Data analysis

The results of the MLQ questionnaire will be processed by adding up the scores of transformational, transactional and laissez faire leadership values according to the Bass transformational questionnaire (1985). While the LMX diagram is used to determine the interpretation of the relationship between LMX from the perspective of the leader and member, namely by linear regression between leader (X) and member (Y) will be processed using SPSS software.

3. Results and discussion

3.1. Results

The CSSD installation and hospital laundry installation consist of one head of the installation, coordinator, head of sub-installation and Government Employees and Contract Employees. From the interview and questionnaire that was distributed, the following data (**Table 2**) was obtained:

Table 2. Respondent profile of CSSD and laundry installation

Respondent	Education / graduation year	Gender	Unit
Respondent 1	S1 Environmental Engineering /2017	F	Administration
Respondent 2	S1 Management /1996	M	Distribution
Respondent 3	S1 Industrial Engineering / 2004	M	Distribution

Respondent	Education / graduation year	Gender	Unit
Respondent 4	S1 Chemical Engineering /2004	M	Warehouse
Respondent 5	High School / 1991	M	CSSD
Respondent 6	High School / 2011	M	CSSD
Respondent 7	High School / 2017	M	CSSD
Respondent 8	High School / 2015	M	Distribution
Respondent 9	High School / 1994	M	Laundry
Respondent 10	High School / 2015	M	Laundry
Respondent 11	High School / 2004	M	Laundry
Respondent 12	High School Package C/ 2015	M	Laundry
Respondent 13	High School Package C/ 2010	M	CSSD
Respondent 14	Vocational High School /2012	M	CSSD
Respondent 15	Vocational School of Electricity/ 2001	M	CSSD
Respondent 16	Vocational High School/ 2015	F	Distribution
Respondent 17	Vocational High School/ 2017	M	Laundry

From the 17 respondents, employees from the CSSD and Laundry installation consisted of 4 S1 graduates, 7 high school graduates, 2 high school equivalent package C graduates and 4 vocational school graduates.

Table 3. Interview results on transformational leadership aspects at CSSD and laundry installation

No	Aspect	Program	Results	Challenge
1	Building trust (idealized influence - attributes)	Routine satisfaction questionnaire Conduct regular meetings	Meet and eat together, a get-together event every end of year	Some employees have problems with money
2	Acting with integrity (ideal influence - behavior)	Create an integrated consumable product procurement and selection system.	Financial management and profit sharing can be better organized.	The linen procurement budget is still held by another department so it cannot be centralized
3	Motivating others (inspirational motivation)	Conducting employee rotation and training	Internship program at CSSD for all laundry staff and vice versa.	Transfer officers from other installation who are not qualified find it difficult to develop
4	Encouraging innovative thinking (intellectual stimulation)	Digitalization of administration preparation of the 2023 linen centralization plan	Leveraging Google Spreadsheets and SID	Lack of financial support and management systems
5	Individual training & development (individual consideration)	Education and training of CSSD officers and laundry installation	Inhouse training every year	Time is limited due to work

The data above is the result of interviews with the heads of CSSD and laundry installation about what they did when they were in their positions, with reference to aspects of transformational leadership.

Table 4. Results of MLQ questionnaire analysis

Score	Max	Results	Type	Leadership	Information
16.42	20	High	Idealized influence (associated)	Transformational	Ideal influence (attribution and behavior): the leader holds the trust of subordinates, maintains confidence and respect, shows dedication, inspires hopes and dreams, and acts as a role model for subordinates.
18.42	20	High	Idealized influence (behavior)		
18.83	20	High	Inspirational motivation (IM)	Transformational	Inspirational motivation (IM): measures the extent to which the leader provides a demanding vision and goals, uses appropriate symbols and images to help others focus on their work, and tries to make others feel their work is important.
16.83	20	High	Intellectual stimulation (IS)	Transformational	Intellectual stimulation (IS); indicates the extent to which the leader encourages subordinates to be creative in looking at old problems in new ways, creates an environment that is tolerant of extreme positions, and encourages people to question their own and management's values and beliefs.
15.08	20	High	Individualized consideration (IC)	Transformational	Individual consideration (IC): the extent to which the leader shows interest in the well-being of others, assigns tasks individually, and pays attention to those who are less involved in the group.
14.17	20	Moderate	Contingent reward (CR)	Transactional	Conditional rewards (CR): indicates the extent to which the leader tells others what to do to be rewarded, emphasizes what is expected of them, and recognizes their achievements.
16.83	20	High	Management-by-exception: active	Transactional	Monitoring for deviations and errors management by exception (active): assesses whether the Leader informs others of job requirements, is satisfied with standard performance, and believes in "if it isn't broke, don't fix it."
11.83	20	Moderate	Fights (exception: passive)	Fires Passive	Measures how often leaders wait for problems to arise before taking corrective action.
9.83	20	Moderate	Laissez faire (LF)	Passive	Laissez-faire (LF): measures whether the leader requires little help from others, is content to let things run their course, and lets others do their own thing.
12.92	15	High	More effort	Extra Effort	Just ask your subordinates
16.25	20	High	Effectiveness	Formerly effectiveness	Just ask your subordinates
7.42	10	High	Satisfaction	Satisfaction with the leadership	Just ask your subordinates

The hospital CSSD installation is part of low-level management, namely low-level management is the level of implementing management. The results of MLQ questionnaire in **Table 4** that obtained high transformational leadership values, moderate transactional leadership and also moderate laissez faire leadership.

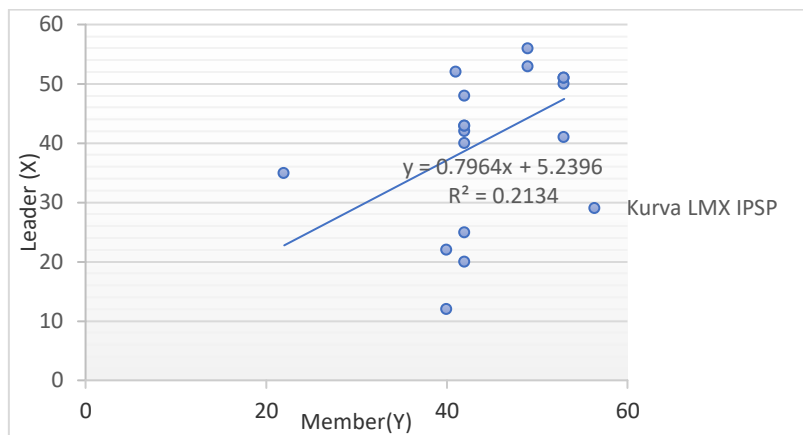


Figure 1. LMX regression graph of CSSD and laundry installation

The data above is the result of linear regression from the MLX questionnaire between leaders and members of the CSSD and laundry installation. The results of the two assessments are mapped in **Figure 2**. The regression results are $y = 0.7964x + 5.2396$, $R^2 = 0.2134$.

3.2. Discussion

Table 5. The results of the comparative interview of conditions before and after the implementation of transformational leadership with the parameters of the "New Model of Ishikawa Diagram for Quality Assessment"

Management elements	Definition	Before	After	Challenge
<i>Measurement</i>	Measurement and calculation issues, including data input errors and performance system flaws	Many complaints about missing linen	Linen is not lost but often damaged due to prolonged use but unreported. Now, reporting records are maintained and the items are returned to the supply department	Limited budget
<i>Material</i>	Problems related to raw materials, both in terms of quality, quantity and storage.	Raw materials planning is not well organized	Start organizing warehouse stock and control incoming and outgoing stock according to the computer system.	Unnoticed by management
<i>Machine</i>	Related to the equipment and machinery in the production process.	Underutilized machinery	Running all machines to work optimally and performing routine maintenance.	Maintenance by the IPS department, but financial resources remain constrained
<i>Environment</i>	External factors that are difficult to control, such as weather, natural disasters, or pandemic situations.	Production space cramped and uncomfortable.	Trying to optimize existing conditions	Limited budget
<i>Manpower</i>	Factors related to employees, such as skills, workforce size, or performance issues.	Under skill human resources	Rotate and see employee potential so that it can be optimal.	No employees position rotation

Management elements	Definition	Before	After	Challenge
<i>Method</i>	Relating to company operations, including production, marketing and distribution processes.	Different locations of production and distribution, require daily linen transfers from 1st to 4th floor.	The relocation of linen distribution to the 1st floor resulted in the elimination of transporters, making employees more efficient.	Organizational restructuring is hindered by gaps in staff skills, and some human resources are difficult to develop.

Employees in the CSSD installation and laundry have met the requirements of the 2009 hospital sterilization guidelines but there are still some problems, especially the quality of the employees. Some employees who are transfers from other units have a lower work ethic compared to employees who have been placed in the CSSD and laundry installation from the beginning. This results in bad behavior being transmitted to other employees. During an interview with the head of the CSSD installation, it was found that several management concepts had been implemented but many had not been able to provide change due to the lack of response from employees. Ministry of Health of the Republic of Indonesia (2004) in linen management guidelines in hospitals, the source of infection is the behavior of hospital staff, namely having little or no understanding of how disease is transmitted, paying little or no attention to cleanliness, paying little or no attention to aseptic and antiseptic techniques, suffering from a disease, not washing hands before or after doing work.

In the results of the observation of the comparison of conditions before and after the implementation of transformational leadership with parameters in **Table 5** "New Model of Ishikawa Diagram for Quality Assessment" by Liliana (2016), several obstacles were found, such as human resource quality factors, hospital management support, budget and organizational structure that affect the achievement of the head of the CSSD installation and laundry targets.

Table 6. Microbiological quality of clean linen and instruments sterile at CSSD and laundry installation

No	Type of linen/instrument	Laboratory test results (CFU/100cm ²)	Germ count standard (CFU/100cm ²)	Category
1	Inpatient blanket	12	20	qualify
2	Inpatient room linen	2	20	qualify
3	Inpatient room pillowcase	<1	20	qualify
4	Isolation room blanket	<1	20	qualify
5	Isolation room bed sheet	2	20	qualify
6	Isolation room pillowcase	2	20	qualify
7	Big duk	<1	20	qualify
8	Hole duk	4	20	qualify
9	Gown surgery	<1	20	qualify
10	Endoscopy room scope	8	20	qualify
11	Hollow fiber hemodialysis	<1	20	qualify
12	Dental and oral pliers	<1	20	qualify

According to India National Health Systems Resource Centre (2022), despite all measures and advancements in technology, hospital acquired infections remain a challenge in healthcare scenario today. Sharma et al (2022) explained that the microbial contamination of linen is common, and there is an urgent need to develop consensus on the microbial examination frequency and acceptable range of organisms on hospital linen worldwide. According to Minister of Health Regulation Number 7 of year 2019 of Minister of Health (2019), the microbiological value in linen and instruments determines the quality of the washing and sterilization results. Microbiological measurements of clean linen in CSSD and laundry installation are not carried out periodically due to the lack of budget from the hospital. After implementing transformational leadership, control was carried out in each production process using washing indicators and laboratory tests. In laboratory tests on clean linen, the highest number of germs was found on inpatient blankets, namely 12 CFU/100cm². We collect this data by taking swab samples from instruments and linen, then we test them in a laboratory outside the hospital by the sanitation department. The measurement results still meet the standard for the number of germs set by Minister of Health Regulation Number 7 of 2019 No. 7 of 2019, namely the standard for the number of germs on clean linen and medical personnel uniforms after leaving the washing process does not exceed 20 CFU/100cm².

The exchange of leaders and members that occurs at this level is formed from the relationship between the head of the work installation (as a leader) and his direct subordinates (as members). The relationship will form an in-group. A comfortable working atmosphere in an in-group will be able to improve the performance of members (Minsky, 2002). Interpretation of **Figure 2** shows that in the CSSD installation and laundry installation an in-group has been formed. According to Putri & Rochmah (2012) that is meant by in-group is a group of members who always work together with the leader in various matters so that the quality of LMX with the leader is good. While members who are in the out-group indicate that members rarely work together with the leader.

Although the regression coefficient value is small, from the LMX graph with an area limited by the line $y=x+0.5SD$, the number of regression points is greater in the positive balance position. In this condition, it is shown that the assessment between the leader and the members is equally high. The relationship is considered to have good quality (Maslyn & Uhl-Bien, 2001). MLX graphic results on CSSD and laundry installation describe most employees are included in the in-group. From most respondents, it resulted in a balanced positive where subordinates are close to the installation leader. Closeness to the installation leader can potentially lead to positive performance for the implementation of activities in the CSSD and laundry installation. In addition, most employees feel satisfied with the implementation of transformational leadership.

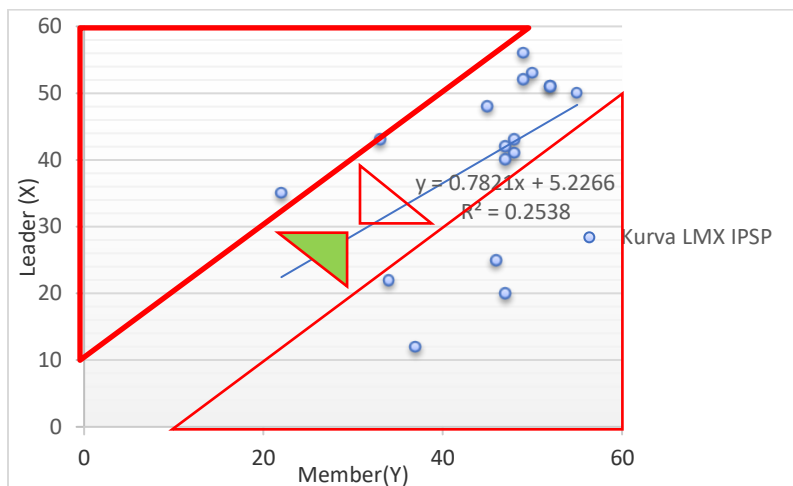


Figure 2. LMX CSSD and laundry installation

Several members fall into the unbalanced formal overinvestment area, this area is limited by the line $y=x-0.5SD$. This condition occurs when the leader gives a higher value than the member while the member gives a very low value for the leader. Dockery & Steiner (1990) and Day & Crain (1992) stated that leaders who give higher values than members expect a better working relationship. There are several officers who rated less well, when tried to be confirmed gave the answer that the leader should care more about his subordinates. Meanwhile, when cross-checked with the leaders of the CSSD installation and laundry installation, some of these employees if there is no reward are less responsive if given additional work by their superiors (transactional) except for daily routine work. Gones (2016) stated that in health facilities where workers are skilled and accustomed to working in a certain way, staff may tend to be more resistant to change. Second, the emphasis on regulation can maintain staff ownership and commitment to work. Some literature suggests transformational leadership is when a leader inspires people to follow them through vision, passion, and enthusiasm. Other studies suggest a combination of transactional and transformational leadership may be applied in different contexts. This research can be continued with organizational culture assessment indicator (OCAI), according to Masood *et al.* (2006), the OCAI questionnaire was used to obtain an insight into the organizational culture based on the OCAI typology, namely adhocracy, clan, hierarchical, and market.

4. Conclusion

From the results of the questionnaire, the transformational leadership value of the leader is classified as high indicating that most employees are satisfied with its implementation. The leadership style takes into account external influencing factors, requiring leaders to be flexible in

adapting their approach to suit specific situations and conditions. Key factors influencing leadership implementation in the CSSD include human resource quality, internal structure, hospital management support, and budget constraints. This study employs a qualitative method with a survey approach in the CSSD installation of a hospital, providing findings that could be expanded to a broader population.

Acknowledgement

Thanks for the support and professional assistance from all the respected respondents who have made this journal eligible for publication.

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