

Work Discipline Moderates Compliance, Work-Life Quality, and Pharmaceutical Supply Performance

Putu Nadya Indra Primardani¹, Aprilita Rina Yanti², Erry Yudhya Mulyani³

^{1,2,3} Master's Program in Hospital Administration, Faculty of Health Sciences, Esa Unggul University, Jakarta, Indonesia

Article information

Article history:

Received: July 01st, 2026

Revised: July 27th, 2026

Accepted: August 20th, 2026

Corresponding author:

Name: Putu Nadya Indra Primardani

Address: Jalan Arjuna Utara No. 9,

Kebon Jeruk, West Jakarta, Indonesia

E-mail:

nadyaprimardani@student.esaunggul.ac.id

International Journal of Nursing and Health Services (IJNHS)

Volume 9, Issue 4, August, 2026

DOI: 10.35654/ijnhs.v9i4.946

E-ISSN: 2654-6310

Abstract

Background: Discrepancies between medication records on inventory cards and the actual physical count in the pharmacy department can result in financial losses and reduced reliability of pharmaceutical supply management, disrupting continuity of hospital services. **Objective:** To analyze the influence of compliance and quality of work life on pharmaceutical supply management performance, with work discipline as a moderating variable. **Method:** A quantitative cross-sectional study was conducted at the Pharmacy Department of Prima Husada Hospital in Malang. All 32 active pharmacy staff who met the inclusion criteria were included through total sampling. Data were collected using Likert-scale questionnaires and analyzed using the Three-Box Method, multiple linear regression, and Moderated Regression Analysis (MRA) with SPSS. **Result:** Compliance, quality of work life, and work discipline had significant positive effects on pharmaceutical supply management performance, with high model explanatory power ($R^2=0.975$). The compliance $\times$ work-discipline interaction was significantly positive, whereas the quality-of-work-life $\times$ work-discipline interaction was significantly negative. **Conclusion:** Work discipline demonstrated a dual moderating role: it strengthened the relationship between compliance and performance but weakened the relationship between quality of work life and performance. **Recommendation:** Hospital management should balance supervision, rewards, improvements to record-keeping systems, and resource support to promote accurate and sustainable pharmaceutical inventory management.

Keywords: compliance; pharmaceutical supply performance; quality of work life; work discipline

This is an Open Access article distributed under the terms of the Creative Commons Attribution 4.0 International License CC BY -4.0



INTRODUCTION

supply management is a key element in ensuring the continuity of clinical services while maintaining hospital cost efficiency. Law No. 17 of 2023 on Health emphasizes the obligation of hospitals to ensure the availability of pharmaceutical products, medical devices, and medical consumables that are of high quality, safe, beneficial, and affordable, and that are managed effectively, efficiently, and accountably (1). Ministry of Health Regulation No. 72 of 2016 designates the Hospital Pharmacy Department (IFRS) as a strategic unit within the hospital's management responsible for managing both the managerial aspects (logistics of pharmaceutical supplies, medical devices, and disposable medical supplies) and clinical pharmacy services (2). Inefficiencies in medication management have direct medical and economic consequences (3). Operationally, pharmaceutical logistics management encompasses planning through control, and the storage/control phase relies heavily on real-time inventory card updates for every incoming and outgoing transaction to maintain accuracy, prevent discrepancies, and reduce the risk of stockouts or losses due to missing, damaged, or expired medications (4-7).

In practice, discrepancies in inventory data and low compliance with recording procedures still occur frequently (8). This situation is evident at Prima Husada Hospital, a Type C private hospital in Malang Regency, East Java, where the results of inventory counts for the period October 2023–June 2024 revealed discrepancies between system inventory and physical inventory, with varying and fairly significant differences. Field observations showed that all staff understood the SOP for inventory recording and were aware that ideal recording should be done at the time of the transaction; however, delays were still found, as well as cumulative recording just before breaks or at the end of shifts, and instances where recording was not performed at specific times.

A preliminary survey corroborated these findings: 8 out of 10 respondents admitted to having delayed filling out inventory cards, particularly during rush hour due to a surge in

patients or prescriptions and the demand for quick response times. Other obstacles identified included lost or misplaced inventory cards, illegible handwriting, discrepancies between physical inventory and the SIMRS, slow computers or network issues, SIMRS malfunctions, and the lack of a low-stock alert feature.

The literature confirms that inventory control is strongly influenced by compliance with procedures; however, compliance rates in the practice of pharmaceutical inventory control are still reported to be low across various settings (9). In addition to compliance, quality of work life (QWL)—which encompasses psychological, social, and physical well-being, such as workplace safety, fair compensation, participation, and work-life balance—is linked to motivation and work effectiveness (10-12). Work discipline is also relevant as an internal control mechanism to ensure consistency in the implementation of SOPs, although empirical findings regarding its impact on performance remain mixed (13-16).

Based on empirical issues at RS Prima Husada regarding IFRS and the need to strengthen the evidence base, this study aims to analyze the effects of compliance and QWL on the performance of pharmaceutical inventory management, with work discipline as a moderating variable. The findings are expected to contribute to the understanding of behavioral factors and work contexts that influence the accuracy of inventory recording and serve as a basis for managerial improvements to reduce inventory discrepancies and enhance the reliability of pharmaceutical inventory management.

OBJECTIVE

This study aims to analyze the influence of compliance and quality of work life on pharmaceutical supply management performance, as well as to analyze the role of work discipline as a moderating variable in the relationship between compliance and quality of work life and pharmaceutical supply management performance at the Pharmacy Department of Prima Husada Hospital in Malang.

METHODS

Design

This study employs a quantitative approach with a cross-sectional design. This design is used to measure respondents' perceptions and test the relationships among variables at a single point in time (17). The independent variables are compliance (X1) and quality of work life (X2); the dependent variable is pharmaceutical supply management performance (Y); and the moderator variable is work discipline (Z). The study was conducted at the Pharmacy Department of Prima Husada Hospital, located at Perum Banjararum Selatan No. 3-7 Mondoroko, Singosari, Malang, East Java, in August 2025.

Sample size and sampling technique

The study population consisted of all 32 staff members of the Pharmacy Department at Prima Husada Hospital, all of whom were included in the sample using total sampling. Inclusion criteria included active pharmacy staff working at the Pharmacy Department of Prima Husada Hospital, including both permanent employees and contract workers. Exclusion criteria included non-pharmacy staff, such as interns or students on practical training, as well as pharmacy staff who were not actively on duty due to leave, illness, or absence during the data collection period.

The instrument for data collection

Data were collected using a Likert-scale questionnaire that measured four main variables: compliance, quality of work life, work discipline, and performance in pharmaceutical supply management. The compliance instrument consisted of 9 statements covering attitudes toward behavior, subjective norms, and perceptions of behavioral control. The quality of work life instrument consisted of 27 items covering communication, employee engagement, career development, conflict resolution, workplace safety, occupational health, sense of security, compensation, and pride in the organization. The pharmaceutical inventory management performance instrument consists of 15 items covering the dimensions of recording accuracy,

data completeness, timeliness of updates, physical-system data consistency, information system reliability, and reconciliation and follow-up of discrepancies. The work discipline instrument consists of 16 statements covering attendance, adherence to work standards, adherence to work regulations, level of vigilance, and work ethics. The validity test was conducted using product-moment correlation with a table r value of 0.349. All 67 items had calculated r values greater than the table r value and significance levels less than 0.05; therefore, all items were deemed valid. The reliability test used Cronbach's alpha, with a reliability criterion of an alpha value greater than 0.70 (18).

Data collection process

Data were collected in August 2025 at the Pharmacy Department of Prima Husada Hospital, Singosari, Malang, East Java. The data collection was conducted by [INSERT NAME/ROLE OF THE PRIMARY DATA COLLECTOR]. [State whether research assistants were involved. If applicable, specify their number and roles, such as distributing and collecting questionnaires, providing standardized instructions, or checking questionnaire completeness.] Before data collection, respondents received an explanation of the research objectives, data confidentiality, and their voluntary right to participate. After providing informed consent, paper-based questionnaires were distributed and completed independently by respondents based on their work conditions and experiences.

Data analysis

Data analysis was conducted using the Three-Box Method to describe the trends in respondents' answers across the low, moderate, and high categories (19). Inferential analysis was performed using multiple linear regression to test the direct effects of compliance, quality of work life, and work discipline on pharmaceutical supply management performance. Moderated Regression Analysis (MRA) was used to examine the role of work discipline as a moderating variable through the interaction between compliance and work discipline, and the interaction between quality

of work life and work discipline. Data processing was performed using SPSS with a significance level of 0.05. Classical assumption tests included the Kolmogorov-Smirnov normality test, multicollinearity via VIF, and heteroscedasticity via the Glejser test.

Ethical consideration

This study received ethical approval from Universitas Esa Unggul. All. Before participation, all respondents were informed

RESULT

Participant Characteristics

Based on the respondents' characteristics, the majority were women (94%), aged 25–35 years (94%), held a D3

about the study objectives, procedures, voluntary nature of participation, confidentiality of their information, and their right to withdraw without penalty. Written informed consent was obtained from each respondent before the questionnaire was administered. Respondents' identities and study data were kept confidential and were used solely for academic and research purposes.

degree in Pharmacy (53%), and worked at a pharmacy warehouse (94%). This composition indicates that the respondents were predominantly pharmacy staff of working age who were directly involved in patient care, including daily inventory recording

Table 1. Characteristics of Study Respondents

Characteristics	Category	Number	Percentage
Gender	Female	30	94%
Gender	Male	2	6%
Age	< 25 years	2	6%
Age	25–35 years	30	94%
Age	> 35 years	0	0%
Highest level of education	Pharmacist	9	28%
Highest level of education	Bachelor's Degree in Pharmacy	6	19%
Highest Level of Education	Associate's Degree in Pharmacy	17	53%
Work Unit	Pharmacy Warehouse	30	94%
Work Unit	Pharmacy Warehouse	2	6%

Instrument reliability and descriptive categories

All variables had Cronbach's alpha values greater than 0.70, indicating that the instrument is reliable. Descriptively, all variables fell into the moderate category. The pharmacy management performance variable had an average index of 21.00. The highest-scoring dimension was follow-up reconciliation, with an average of 22.20, while the lowest-scoring dimension was physical-system data consistency, with an average of 19.92; the lowest-scoring item was the statement "I rarely find discrepancies between inventory records and the physical count of medications," with an index of 16.25.

The compliance variable had an average index of 23.53. The highest-scoring items were the belief that compliance with work rules is beneficial for performance and that complying with work rules helps improve the quality of pharmacy services, each with an index of 25.50. The quality of work life variable had an average index of 22.00. The highest-scoring item was employment insurance coverage, with an index of 25.00, while the lowest-scoring item was fair recognition for performance achievements, with an index of 16.50. The work discipline variable had an average index of 24.56. The highest-scoring dimension was attendance, with an average of 25.58, while the lowest-

scoring dimension was adherence to work standards, with an average of 23.92.

The classical assumption tests indicate that the data meet the requirements for regression analysis. The Kolmogorov-Smirnov normality test yielded an Asymp. Sig. of 0.200, indicating that the residuals are normally distributed. The multicollinearity test showed VIF values of 1.128 for compliance, 1.301 for

quality of work life, and 1.352 for work discipline, all of which are less than 10. The heteroscedasticity test showed significance values of 0.515 for compliance, 0.597 for quality of work life, and 0.891 for work discipline, all of which were greater than 0.05.

Table 2. Reliability Results and Descriptive Categories of Variables.

Variable	Number of Items	Cronbach's alpha	Reliability Category	Average Index	Three-Box Category
Pharmacy Supply Management Performance	15	0.751	Reliable	21.00	Moderate
Compliance	9	0.725	Reliable	23.53	Moderate
Quality of work life	27	0.901	Reliable	22.00	Moderate
Work discipline	16	0.789	Reliable	24.56	Moderate

Multiple Linear Regression

The results of the multiple linear regression indicate that compliance, quality of work life, and work discipline have a significant positive partial effect on pharmaceutical supply management performance. The regression equation obtained is $Y = -18.075 + 0.811X_1 + 0.240X_2 + 0.386Z$. The simultaneous test shows a calculated F value of 363.456 with a

significance level of 0.000, indicating that compliance, quality of work life, and work discipline collectively have a significant effect on pharmaceutical supply management performance. The R value is 0.987, R^2 is 0.975, adjusted R^2 is 0.972, and the standard error is 0.610. Thus, 97.5% of the variation in pharmaceutical supply management performance can be explained by these three variables

Table 3. Results of Multiple Linear Regression on Pharmaceutical Supply Management Performance.

Variables	B	Std. Error	Beta	t-value	Sig.	Notes
Constant	-18.075	1.878	-	-9.624	0.000	-
Compliance (X1)	0.811	0.047	0.548	17.262	0.000	Significantly positive
Quality of work life (X2)	0.240	0.019	0.436	12.772	0.000	Positive significance
Work discipline (Z)	0.386	0.040	0.334	9.610	0.000	Positive and significant

Moderated Regression Analysis

The MRA model yields the equation $Y = 95.920 - 4.922X_1 + 0.640X_2 - 1.857Z + 0.115X_1Z - 0.009X_2Z$. The R value is 0.997, R^2 is 0.993, adjusted R^2 is 0.992, and the standard error is 0.334. This model indicates that the interaction between compliance and work-life quality with work discipline increases the model's explanatory power to 99.3%. The interaction between compliance and work

discipline has a significant positive effect ($B = 0.115$; $t = 8.047$; $p = 0.000$), meaning that work discipline strengthens the relationship between compliance and performance. Conversely, the interaction between quality of work life and work discipline has a significant negative effect ($B = -0.009$; $t = -2.388$; $p = 0.024$), meaning that work discipline weakens the relationship between quality of work life and performance in pharmaceutical supply management

Table 4. Results of Moderated Regression Analysis with Work Discipline as the Moderating Variable.

Model	B	Std. Error	Beta	t	Sig.	Meaning
Constant	95.920	16.992	-	5.645	0.000	-
Compliance	-4.922	0.712	-3.327	-6.917	0.000	Significantly negative after interaction
Work-Life Quality	0.640	0.184	1.163	3.471	0.002	Significantly positive
Work discipline	-1.857	0.328	-1.606	-5.656	0.000	Significantly negative after interaction
Compliance × work discipline	0.115	0.014	5.270	8.047	0.000	Strengthening
Work-life quality × work discipline	-0.009	0.004	-1.174	-2.388	0.024	Weakening

DISCUSSION

The research findings indicate that compliance has a positive effect on the performance of pharmaceutical inventory management. This result is understandable because pharmaceutical inventory management relies heavily on staff consistency in following SOPs, particularly in the timely recording of stock cards. When records are maintained according to procedure, inventory data becomes more accurate, the risk of discrepancies between physical and system inventory can be minimized, and the processes of inventory planning and control become more reliable. These findings align with the Theory of Planned Behavior, which identifies behavioral control and work norms as key factors in shaping compliance behavior (20).

Workplace quality also has a positive impact on the performance of pharmaceutical supply management. Supportive working conditions, good communication, a sense of security, engagement, and adequate recognition can boost staff motivation and their sense of responsibility toward their work. In the context of pharmacy facilities, a good quality of work life (QWL) can help staff maintain accuracy and resilience, especially when facing high service demands during peak hours. Thus, efforts to improve performance cannot rely solely on instructions and standard operating procedures (SOPs); they must also take into account the working conditions experienced by staff (10-12).

Work discipline has been shown to have a positive impact on performance. Discipline helps ensure that rules, work standards, and record-keeping procedures are consistently followed. In healthcare organizations, discipline is necessary to maintain service quality, patient safety, and accountability in resource management. However, discipline should not be understood merely as a mechanism for supervision or the imposition of sanctions, but rather as a control system supported by communication, leadership by example, clear procedures, and a balance between rewards and consequences (13-16).

The most notable finding is the dual moderating role of work discipline. On the one hand, work discipline strengthens the influence of compliance on performance. This suggests that compliance with SOPs is more effective when supported by consistent work discipline. On the other hand, work discipline actually weakens the influence of work-life quality on performance. This finding indicates that when disciplinary mechanisms are too dominant or perceived as rigid controls, the benefits of work-life quality may be diminished. Thus, efforts to improve discipline need to be designed proportionally so as not to undermine the positive impact of a supportive work environment.

From a managerial perspective, the results of this study indicate that Prima Husada Hospital needs to balance three key aspects: procedural compliance, quality of work life, and work discipline. Strengthening the SOP for

inventory recording must be accompanied by improvements to supporting systems, such as enhancing the stability of the SIMRS, improving the inventory card workflow, providing low-stock alerts, and implementing constructive supervision. The head of the pharmacy department also needs to provide regular feedback, propose to management that staff be recognized for their attention to detail, and ensure adequate resource support so that work discipline is not perceived merely as pressure but as a professional work culture.

The strength of this study lies in its focus on practical issues in pharmaceutical supply management at the service unit level and the examination of work discipline as a moderating variable. A limitation of this study is that it was conducted only at Prima Husada Hospital; therefore, the results are limited to describing the conditions at that specific hospital and cannot be generalized to all hospitals. Second, the quantitative approach using a questionnaire did not fully capture the underlying reasons why work discipline can weaken the relationship between QWL and performance. Future research is recommended to use a multisite study and a mixed-methods approach so that the dual nature of work discipline can be understood more deeply.

CONCLUSION

Compliance, quality of work life, and work discipline had significant positive effects on pharmaceutical supply management performance at the Pharmacy Department of Prima Husada Hospital. Work discipline strengthened the relationship between compliance and performance, but weakened the relationship between quality of work life and performance. The study was conducted at a single hospital with a cross-sectional quantitative design; therefore, its findings are limited to the study context and should not be generalized to all hospitals.

RECOMMENDATION

Hospital management should balance procedural compliance, quality of work life, and work discipline by strengthening inventory-recording procedures, improving SIMRS stability and inventory-card workflow, providing low-stock alerts, applying

constructive supervision, giving regular feedback and appropriate recognition, and ensuring adequate resource support. Future research should use multisite and mixed-methods designs to examine more deeply why work discipline may weaken the relationship between quality of work life and performance.

AUTHOR CONTRIBUTIONS STATEMENT

PNIP: Conceptualization, literature search, data collection, data extraction, data analysis and synthesis, and writing of the original draft. ARY: Conceptualization, methodology, supervision, validation, interpretation of findings, and review and editing of the manuscript. EYM: Methodology, supervision, validation, interpretation of findings, and review and editing of the manuscript. All authors contributed to the intellectual content of the manuscript, critically reviewed the manuscript, approved the final version for publication, and agreed to be accountable for all aspects of the work.

CONFLICTS OF INTEREST

No conflict of interest

DECLARATION OF GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES

During the preparation and revision of this manuscript, the authors used ChatGPT (OpenAI) to assist with language refinement, grammatical editing, and improvement of the clarity and organization of the manuscript. The AI-assisted tool was not used to generate research data, perform data extraction, determine study eligibility, conduct the scientific analysis, or make conclusions independently. All AI-assisted content was critically reviewed, verified, and edited by the authors. The authors take full responsibility for the accuracy, integrity, and final content of the manuscript.

Acknowledgement

The author would like to express gratitude to the entire community of Prima Husada Hospital in Malang, particularly the Pharmacy Department of Prima Husada Hospital, all pharmacy department staff who served as respondents, as well as the Master's Program in Hospital Administration at Esa

Unggul University, all advisors, and all parties who provided support in the conduct of this research.

REFERENCES

- (1) Republic of Indonesia. Law of the Republic of Indonesia No. 17 of 2023 on Health. Jakarta: Republic of Indonesia; 2023.
- (2) Ministry of Health of the Republic of Indonesia. Regulation of the Minister of Health of the Republic of Indonesia No. 72 of 2016 concerning Standards for Pharmaceutical Services in Hospitals. Jakarta: Ministry of Health of the Republic of Indonesia; 2016.
- (3) Satibi, et al. Strategic Map Planning for Pharmacy Services in Regional General Hospitals Using the Balanced Scorecard Approach. Yogyakarta; 2014.
- (4) Seto. Pharmacist Management. Surabaya: Airlangga University; 2004.
- (5) Aditama TY. Hospital Administration Management. Jakarta: UI Press; 2003.
- (6) Wati W, Fudholi A, Pamudji G. Evaluation of Drug Management and Improvement Strategies Using the Hanlon Method in the Pharmaceutical Department of a Hospital in 2012. *J Manaj Pelayanan Farm*. 2013;3(4):283-290.
- (7) Prihatiningsih D. Overview of the Drug Storage System in the Pharmacy Warehouse at Asri Hospital in 2011. Depok: University of Indonesia; 2012.
- (8) Ministry of Health. Guidelines for the Management of Hospital Pharmaceutical Supplies. Jakarta: Directorate General of Pharmacy and Medical Devices; 2011.
- (9) Ching C, Fuzail MA, Zaman MH, Wirtz VJ. Compliance with good storage practices in pharmacies and medicine outlets: a scoping review. *J Pharm Pract Res*. 2023;53(5):1-10. doi:10.1002/jppr.1854.
- (10) Martel JP, Dupuis G. Quality of work life: theoretical and methodological problems, and presentation of a new model and measuring instrument. *Soc Indic Res*. 2006;77(2):333-368. doi:10.1007/S11205-004-5368-4.
- (11) Rethinam G, Ismail M. Constructs of quality of work life: a perspective of information and technology professionals. *Eur J Soc Sci*. 2008;7.
- (12) Cascio WF. Managing Human Resources. New York: McGraw-Hill; 2006.
- (13) Hasibuan MSP, Hasibuan HMSP. Human Resource Management. Jakarta: Bumi Aksara; 2016.
- (14) Fahmi I. Human Resource Management: Theory and Application. Bandung: Alfabeta; 2016.
- (15) Deviani E, Isyanto P, Yani D. Implementation of work discipline on the performance of KJ Pharmacy employees. *J Innov Soc Sci Dev*. 2023;2(1):45-53.
- (16) Hermina N. The Effect of Work Discipline on Employee Performance (A Case Study of the Health Office on Tanimbar Island). *Med Leg Update*. 2020;20(3).
- (17) Sugiyono. Business Research Methods: Quantitative, Qualitative, Mixed-Methods, and R&D Approaches. Bandung: CV Alfabeta; 2017.
- (18) Ghozali I. Application of Multivariate Analysis Using IBM SPSS 25. 9th ed. Semarang: Diponegoro University Press; 2018.
- (19) Ferdinand A. Management Research Methods. Semarang: Diponegoro University Press; 2006.
- (20) Ajzen I. The Theory of Planned Behavior. *Organ Behav Hum Decis Process*. 1991;50(2):179-211. doi:10.1016/0749-5978(91)90020-T.
- (21) Taylor FW. The Principles of Scientific Management. New York: Harper & Brothers; 1911.
- (22) Hassan WE. Hospital Pharmacy. 5th ed. Philadelphia: Lea & Febiger; 1986.
- (23) Quick JD, Rankin JR, Laing RO, O'Connor RW, Hogerzeil HV, Dukes MNG, et al. Managing Drug Supply: The Selection, Procurement, Distribution, and Use of Pharmaceuticals. 2nd ed. West Hartford: Kumarian Press; 1997.
- (24) Wang RY, Strong DM. Beyond accuracy: what data quality means to data consumers. *J Manag Inf Syst*. 1996;12(4):5-34. doi:10.1080/07421222.1996.11518099.
- (25) Nwoke J. Regulatory compliance and risk management in pharmaceuticals and healthcare. *Int J Health Sci*. 2024;7:60-88. doi:10.47941/ijhs.2223.
- (26) Kato Y, Sekiya T, Ishii R, Hirako Y, Satoh H, Kimura H. Quality of work life among

- community pharmacists and its association with subjective evaluations of pharmaceutical services. *Explor Res Clin Soc Pharm.* 2024;14:100458. doi:10.1016/J.RCSOP.2024.100458.
- (27) Rajasekhar P, Kumar PS. A study on quality of work life in the pharmaceutical industry. *Int J Mark Hum Resour Manag.* 2024;15(1):57-62.
- (28) Hadi MA, et al. The influence of work discipline, quality of work life (QWL), and work environment on work motivation and performance. *Enrichment Journal.* 2022.
- (29) Widiastuti D, Wiyarni W, Sudjawoto E. Examining the role of motivation and competence on employee performance with discipline as a moderating variable. *Int J Manag Stud Res.* 2020;8(8):1-10. doi:10.20431/2349-0349.0808001.
- (30) Walton RE. Quality of working life: what is it? *Sloan Manag Rev.* 1973;15(1):11.
- (31) Luthans F. *Organizational Behavior: An Evidence-Based Approach.* 12th ed. New York: McGraw-Hill; 2011.