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Analysis of Workload and Work Environment on Reducing Medication Errors with the Use of Technology as an Intervening Variable in Inpatient Pharmacy Depots Bogor City Regional Hospital

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Abstract *This study aims to analyze the impact of workload and work environment on reducing medication errors through the use of technology as an intervening variable in the Inpatient Pharmacy Depot of RSUD Kota Bogor. Medication error refers to errors in the medication process that can endanger patients, and this research examines how workload, work environment, and technology influence such errors. The research method employed is quantitative, using a survey approach with questionnaires distributed to 30 pharmaceutical staff at the Inpatient Pharmacy Depot of RSUD Kota Bogor. Data analysis was conducted using the Partial Least Square (PLS) method. The results show that workload has a significant effect on medication errors. The higher the workload, the greater the risk of medication errors. However, workload does not have a significant impact on the use of technology. On the other hand, the work environment does not significantly affect medication errors, but it does have a significant influence on the use of technology. Technology, in turn, does not significantly reduce medication errors and does not mediate the relationship between workload or work environment and medication errors. Based on these findings, it is recommended that the management of RSUD Kota Bogor improves workload management and optimizes the use of technology by providing better training to pharmaceutical staff. Additionally, efforts should be made to enhance the work environment to better support the implementation of technology in reducing medication errors and improving patient safety.*

Keywords *: Workload, Work Environment, Technology*

1. INTRODUCTION

Safe and effective pharmaceutical services are an important component in improving patient safety in hospitals. In Indonesia, pharmaceutical services refer to the Regulation of the Minister of Health of the Republic of Indonesia Number 72 of 2016 concerning Pharmaceutical Service Standards in Hospitals. This regulation serves as a guideline for pharmaceutical personnel in organizing pharmaceutical services with the aim of improving the quality of services, ensuring legal certainty for pharmaceutical personnel, and protecting patients and the community from irrational use of drugs in the context of patient safety (Ministry of Health Regulation, 2016).

According to WHO, the high number of medication errors indicates that it is a global problem. *Medication errors* can occur in four stages, namely prescribing errors , transcription errors , dispensing errors , and administration errors *(* Khairurrijal & Putriana, 2018).

Medication dispensing and prescribing errors account for 4% and 70% of medication errors, respectively, potentially leading to unintended treatment outcomes or even death (Gandhi, Berwick, & Shojania, 2016). Over the past few decades, the pharmacy profession has expanded its role from dispensing medications to providing patient advice and assuming clinical responsibility for ensuring successful patient care outcomes, such as reducing adverse drug events and medication errors (Nimesh, 2020).

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According to Robbins (2010), the environment is institutions or external forces that have the potential to influence organizational performance. The environment is formulated into two, namely the specific environment and the general environment. The specific environment is the part of the environment that is directly related to the achievement of an organization's goals. Elements of this work environment can affect employees' feelings of well-being, collaboration, efficiency, and health. A good work environment is one of the most important elements in making us feel comfortable and so that our activities function and develop. While the general environment is everything outside the organization that has the potential to influence the organization. This environment is in the form of social and technological conditions (Mahawati et al., 2021).

2. LITERATURE REVIEW

Human Resource Management Theory and Hospital Management

Definition of Management According to George R. Terry (1997) in his book *Principle of Management,* the definition of management is a process consisting of planning , organizing , directing , and controlling *to* achieve previously set goals. The definition of management is then known as the management function. George R. Terry is known as the Father of Management Science.

Hospital management is a process that involves planning, organizing, directing, and controlling resources to achieve organizational goals effectively and efficiently. In the context of pharmaceutical services, hospital management plays an important role in ensuring that hospital pharmacies can operate optimally to support patient safety and health (Nugroho & Kusuma, 2023).

Concept of Workload, Work Environment, Technology, *Medication Error* and *Path Analysis*

Workload is one of the important factors that affect the performance and well-being of health workers, including pharmacists in pharmaceutical services. Workload can be defined as the number and complexity of tasks that must be completed by an individual or group within a certain period of time (Setiawan & Putri, 2022). In the context of pharmaceutical services, workload includes various activities such as drug preparation, prescription verification, patient consultation, drug stock management, and other related administration.

The work environment is one of the crucial aspects in pharmaceutical services that can affect performance, productivity, and patient safety. The work environment includes all elements around the workplace that can affect the way employees work and their comfort,

including physical and psychosocial aspects. A good work environment is one that can support employees in carrying out their duties optimally, reduce stress, and improve their well-being (Putri & Santoso, 2024).

Technology has played a very important role in improving the efficiency and effectiveness of pharmaceutical services. In recent years, the adoption of technology in the pharmaceutical field has grown rapidly, providing a variety of benefits, including increased accuracy, operational efficiency, and patient safety. Technology in pharmaceutical services includes a variety of systems and devices used to optimize the process of distributing, managing, and administering drugs to patients.

Medication errors or errors in administering drugs are one of the serious problems in health services that can have a negative impact on patient safety. *Medication errors* can occur at various stages of the drug administration process, from writing prescriptions, preparing drugs, to administering drugs to patients (Yusuf & Hanafi, 2023). These errors can be caused by various factors, including excessive workload, an unsupportive work environment, and suboptimal use of technology.

Path analysis , or path analysis, is a statistical analysis technique used to test the cause-and-effect (causal) relationships between variables in a research model. This method was first introduced by Wright in 1934, and has now been widely used in various disciplines, including social sciences, economics, management, and medicine (Ghozali, 2016). *Path analysis* allows researchers to identify direct and indirect relationships between complex variables, as well as to see the role

3. RESEARCH METHODS

Types of research

Quantitative research is a research approach that focuses on collecting and analyzing numerical data to identify patterns, relationships, or influences among variables. This approach uses statistical methods to measure and analyze the data obtained, allowing researchers to draw objective and generalizable conclusions. Quantitative research often involves the use of questionnaires, surveys, experiments, and secondary data analysis as data collection tools.

This study uses a quantitative approach with a survey method. The quantitative approach was chosen because it allows researchers to measure and analyze the relationship between the variables studied objectively. Quantitative research also allows the collection of large amounts of data, which can be analyzed statistically to obtain more *representative* and generalizable results (Sugiyono, 2018). The survey method was used to collect data from

respondents through questionnaires, which allowed researchers to collect data efficiently and systematically regarding workload, work environment, use of technology, and *medication errors* at the Inpatient Pharmacy Depot of Bogor City Hospital.

Place and Time of Research

Place

The research location was conducted at:

Research Place : Inpatient Pharmacy Depot, Bogor City Hospital

Address : Jl. DR. Sumeru No. 120 Menteng Village

West Bogor District, Bogor City, West Java 16112

No. Tel : (0251) 8312292 Fax (0251) 8371001

Email : rsudkotabogor@yahoo.co.id

Research Time

Table 1

Thesis Completion Schedule

JADWAL PENELITIAN																															
No.	Kegiatan	Maret				April				Mei				Juni				Juli				Agust				Sept				Okt			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
I	Penelitian awal																																
1	Persiapan (proposal)																																
2	Studi Pustaka																																
3	Pembuatan Proposal																																
4	Seminar Proposal																																
5	Pengumpulan dan pengolahan data																																
6	Penyelesaian Bab IV dan V																																
7	Kelengkapan Tesis																																
8	Seminar Hasil Tesis																																

Source : Processed by Writer

4. RESEARCH RESULTS AND DISCUSSION

Research Data Description

There are four variables used in this study, namely workload, work environment, technology and *medication error* . Each variable data was collected through the distribution of questionnaires measured by a Likert scale (on a scale of five), the description of the data for each variable is described as follows:

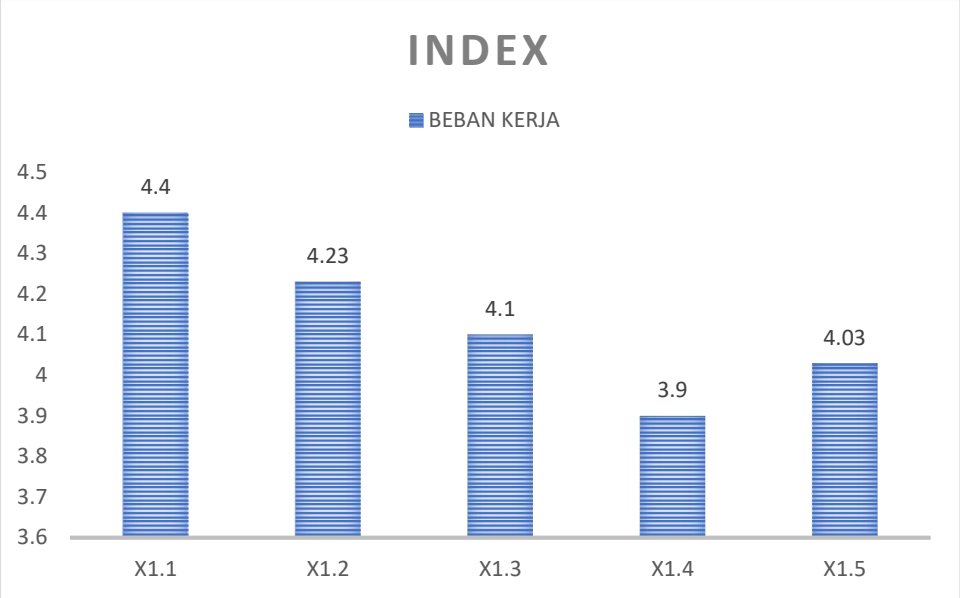
1. Workload Data Description

The Workload Dimension is measured through five statements as described below:

Table 2 Workload Data Description

Code	Statement	Index	SD
X1.1	I feel like the number of recipes I have to deal with every day is too much.	4.40	0.55
X1.2	My workload often causes me to feel exhausted after work.	4.23	0.62
X1.3	I can complete all tasks within the stipulated time.	4.10	0.79
X1.4	I often felt the need to work overtime due to the lack of team members on that shift.	3.90	1.17
X1.5	My workload affects my focus and concentration at work.	4.03	0.88

Source : Data Processed (2024)



Based on the data provided, here are the conclusions regarding workload, fatigue, and employee effectiveness in completing tasks:

a. Number of Recipes to Handle (X1.1) :

   An average of 4.40 indicates that the majority of respondents felt that the number of prescriptions they had to handle each day was very large.

   The standard deviation of 0.55 indicates that this view is fairly consistent among respondents, with little variation.

b. Workload Fatigue (X1.2) :

   The average of 4.23 indicates that most respondents felt that the workload caused fatigue after work, indicating a significant physical or mental impact of their work.

   A standard deviation of 0.62 indicates little variation in responses, but most respondents agreed that burnout is a real problem.

c. Ability to Complete Tasks (X1.3) :

The average of 4.10 indicates that the majority of respondents felt they were able to complete all tasks within the allotted time, despite the high workload.

The standard deviation of 0.79 indicates that there is considerable variation in these views, meaning that some people find it difficult to complete tasks on time.

d. Need to Work Overtime (X1.4) :

The average of 3.90 indicates that quite a number of respondents felt the need to work overtime, especially due to team shortages during shifts.

The standard deviation of 1.17 indicates significant variation in responses, indicating that the need for overtime varies among respondents, with some feeling more pressure than others.

e. The Effect of Workload on Focus and Concentration (X1.5):

The average of 4.03 indicates that the majority of respondents felt their workload affected their focus and concentration, which could impact the quality of work.

The standard deviation of 0.88 indicates that there is considerable variation in respondents' perceptions of the impact of workload on their concentration.

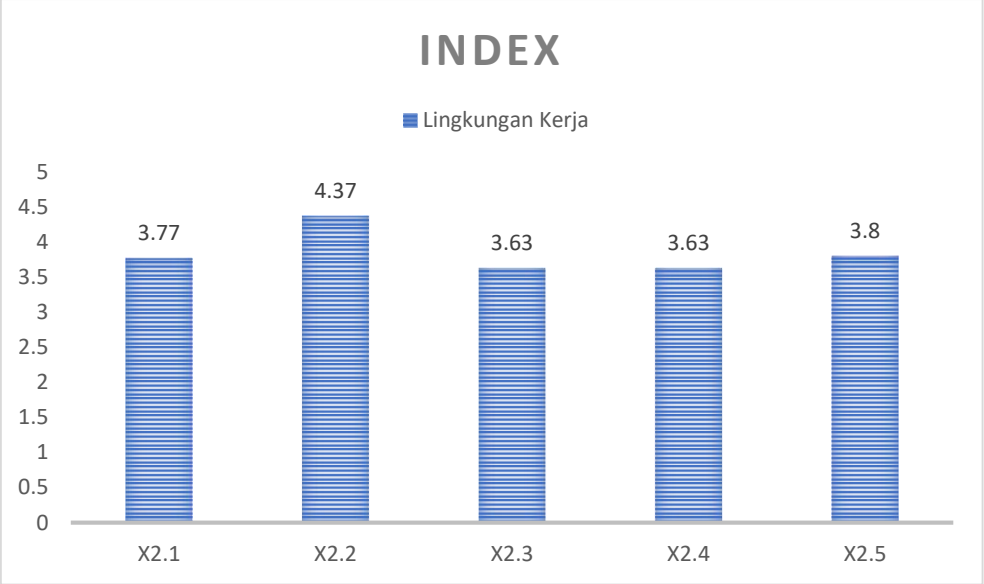
2. Work Environment Data Description

The dimensions of the work environment are measured through five statements as described below:

Table 3 Description of Work Environment Data

Code	Statement	Index	SD
X2.1	Physical conditions (e.g. ventilation, lighting, cleanliness) in the workplace are adequate to support my activities.	3.77	0.80
X2.2	I have a good working relationship with my colleagues	4.37	0.61
X2.3	I often feel emotionally stressed or depressed at work.	3.63	0.71
X2.4	I feel like I have full support from my boss.	3.63	0.80
X2.5	I feel safe working in my work environment	3.80	0.75

Source : Data Processed (2024)



Based on the data presented, here are some conclusions that can be drawn regarding physical conditions, interpersonal relationships, emotional stress, support from superiors, and a sense of security in the workplace:

a. Physical Conditions at Workplace (X2.1) :

   An average of 3.77 indicates that the majority of respondents felt that physical conditions (such as ventilation, lighting, and cleanliness) in the workplace were adequate, although they could still be improved.

   The standard deviation of 0.80 indicates that there is significant variation in respondents' perceptions, which means that there are some respondents who feel that their physical conditions are inadequate.

b. Relationship with Coworkers (X2.2) :

   The average of 4.37 was the highest in this data set, indicating that most respondents felt they had good working relationships with their colleagues.

   The standard deviation of 0.61 indicates that respondents' responses were fairly uniform, and co-worker relationships appear to be a very positive aspect of this work environment.

c. Emotional Stress or Pressure (X2.3) :

   The average of 3.63 indicates that many respondents experience emotional pressure or stress at work, although the intensity may not be too severe.

   The standard deviation of 0.71 indicates that there is variation in the responses, meaning that the level of perceived stress is not evenly distributed among respondents.

d. Support from Superiors (X2.4)

   The average of 3.63 indicates that support from superiors is considered moderate. Some respondents may feel adequate support, while others may feel inadequate support.

The standard deviation of 0.80 indicates that there is large variation in individual experiences of support from superiors, which could be an area for improvement.

e. Feeling of Safety at Work (X2.5):

The average of 3.80 indicates that the majority of respondents feel quite safe in their workplace, although there is room for improvement.

A standard deviation of 0.75 indicates that some respondents may feel less secure than others.

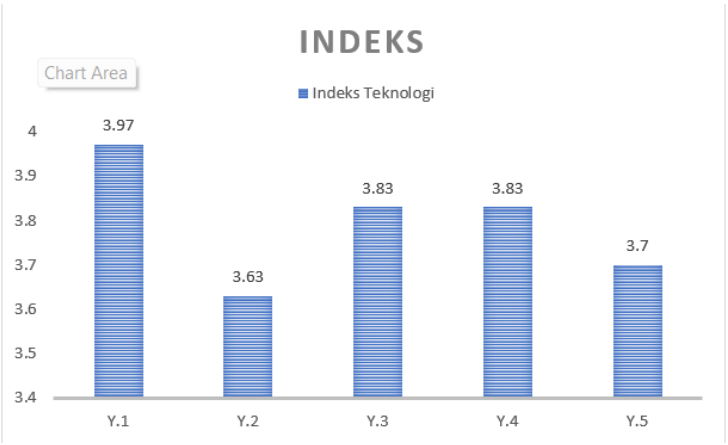
3. Technology Data Description

The Technology Dimension is measured through five statements as described below:

Table 4 Technology Data Description

Code	Statement	Index	SD
Y.1	Technology in the workplace helps make my job easier.	3.97	0.80
Y.2	The use of pharmaceutical information systems in the workplace is adequate.	3.63	0.80
Y.3	I received ample training in using technology in the workplace.	3.83	0.78
Y.4	The use of technology has reduced the risk of errors in drug administration.	3.83	0.90
Y.5	The e-prescribing system in the workplace is running well and effectively.	3.70	0.74

Source : Data Processed (2024)



Based on the data presented, here are the conclusions of each statement:

a. Technology in the workplace helps make my job easier (Mean: 3.97, SD: 0.80):

The average respondent agrees that technology in the workplace makes their work easier. With an average close to 4, it means that the majority feel that technology has a positive impact on the smoothness of work. The standard deviation of 0.80 indicates that the respondents' responses are quite consistent, although there is a little variation.

b. The use of pharmaceutical information systems in the workplace is adequate (Mean: 3.63, SD: 0.80):

Respondents generally felt that the pharmacy information system used was adequate, with a mean of 3.63. Although they tended to agree, this mean was lower than the other statements, suggesting that there may be room for improvement in this area. The variation in responses was also relatively stable with a standard deviation of 0.80.

c. I get enough training in using technology at work (Mean: 3.83, SD: 0.78):

Most respondents felt that the training they received related to workplace technology was sufficient. The mean score of 3.83 indicated that the training was considered good by the respondents. The variation in responses was also low, with a standard deviation of 0.78, meaning that the majority of respondents gave similar responses.

d. The use of technology has reduced the risk of errors in medication administration (Mean: 3.83, SD: 0.90):

Respondents generally agreed that technology helps reduce the risk of medication errors. A mean of 3.83 indicated a positive perception of the impact of technology in this area. A standard deviation of 0.90 indicated that while there was general agreement, there was slightly greater variation in responses compared to other statements.

e. The e-prescribing system in the workplace is working well and effectively (Mean: 3.70, SD: 0.74):

On average, respondents felt that the e-prescribing system in the workplace was functioning well and was effective (Mean: 3.70). Although this value is relatively positive, it is one of the statements with a lower mean value, indicating that there is room for improvement. With a standard deviation of 0.74, respondents' responses were quite consistent.

4. *Medication Error* Data Description

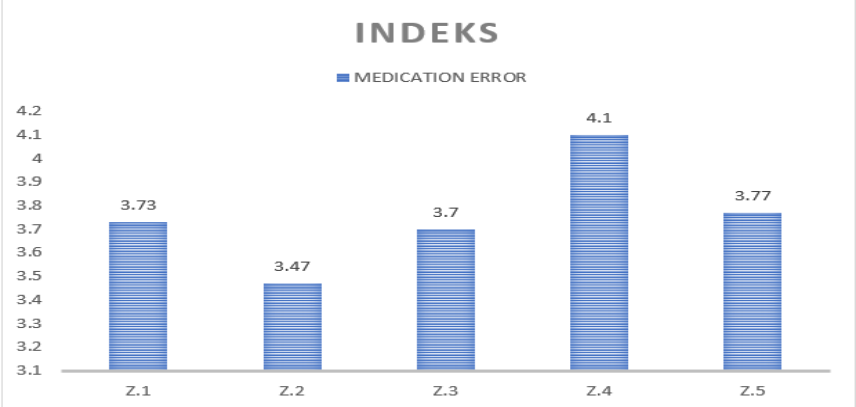
The dimensions of *Medication Error* are measured through five statements as described below:

Table 5 Description of *Medication Error Data*

Code	Statement	Index	SD
Z.1	I have experienced errors in recipe preparation.	3.73	0.89
Z.2	Errors in preparing medications occur frequently in my workplace.	3.47	0.96
Z.3	Medication errors have occurred during my employment.	3.70	0.74
Z.4	Medical errors related to medication administration in the workplace can be better prevented.	4.10	0.83

Z.5	I feel that existing technology has helped reduce medication errors.	3.77	0.76

Source : Data Processed (2024)



Based on the data presented, the following is an analysis and conclusion of the statement regarding errors in the preparation and administration of drugs in the workplace and the role of technology in reducing these errors:

a. I have experienced errors in recipe preparation (Mean: 3.73, SD: 0.89):

   Respondents tended to admit that they had experienced errors in recipe preparation on average. With a mean of 3.73, this suggests that such errors are not uncommon, although not dominant. The standard deviation of 0.89 suggests moderate variation in respondents' responses.

b. Errors in preparing medications frequently occur in my workplace (Mean: 3.47, SD: 0.96):

   The average respondent was less likely to agree that errors occur frequently, with a mean of 3.47. This suggests that while errors may occur, most respondents do not view them as frequent. However, with a standard deviation of 0.96, there is considerable variation in responses, suggesting that some respondents may have different experiences.

c. Medication errors have occurred during my work (Mean: 3.70, SD: 0.74):

   Respondents tended to agree on average that medication errors had occurred during their work. With a mean of 3.70 and a standard deviation of 0.74, this indicates a fairly consistent perception that such errors do occur, although variation in responses was quite low.

d. Medical errors related to medication administration in the workplace can be better prevented (Mean: 4.10, SD: 0.83):

   The majority of respondents strongly agreed that medication errors could be better prevented, with a mean of 4.10. This indicates a strong view that there is room for improvement in preventing errors. The standard deviation of 0.83 indicates that most respondents agreed with this statement, although there was some variation in responses.

e. I feel that existing technology has helped reduce medication errors (Mean: 3.77, SD: 0.76): The average respondent agreed that technology has helped reduce medication errors, with a mean of 3.77. The standard deviation of 0.76 indicates that the majority of respondents have relatively similar views regarding the positive role of technology in reducing medication errors.

PLS Data Analysis

Data analysis in proving the research hypothesis was carried out using Partial Least Square with the help of the SmartPLS version 4 program. The first stage of PLS analysis used the PLS Algorithm method which provided the following model output :

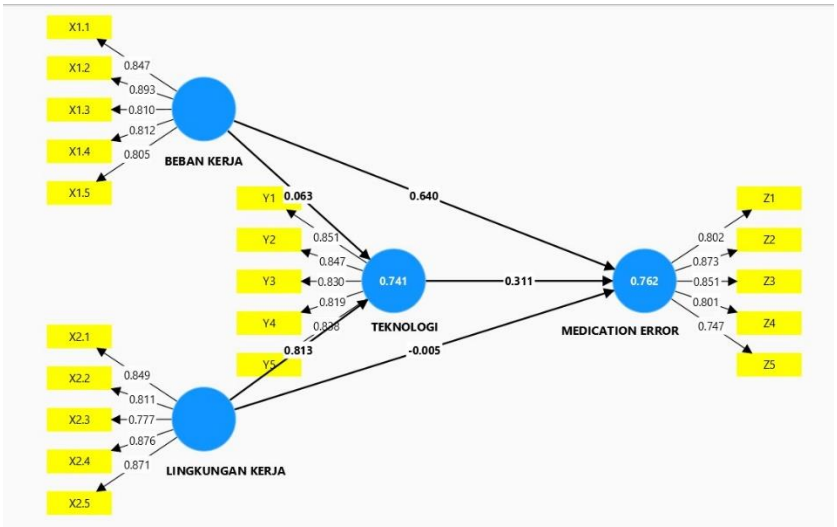


Figure 1 PLS Algorithm Output

Source : Data Processed With SmartPLS version 4 (2024)

Figure 1 explains the model output based on the analysis using the PLS Algorithm method, where in the analysis this method provides a series of results that form the basis for the evaluation of the following PLS model:

1. Outer Model Evaluation

Outer model evaluation includes testing the validity and reliability of indicators.

a. Validity Test

Convergent Validity Test

The convergent validity test is evaluated by the loading factor value, the indicator of each variable is declared valid when it has a loading factor value > 0.7 . The results of the convergent validity test are presented in the following table:

Table 6 Convergent Validity Test

Variables	Code	Loading Factor	Information
Workload	X1.1	0.847	Valid

	X1.2	0.893	Valid
	X1.3	0.810	Valid
	X1.4	0.812	Valid
	X1.5	0.805	Valid
Work environment	X2.1	0.849	Valid
	X2.2	0.811	Valid
	X2.3	0.777	Valid
	X2.4	0.876	Valid
	X2.5	0.871	Valid
Technology	Y1	0.851	Valid
	Y2	0.847	Valid
	Y3	0.830	Valid
	Y4	0.819	Valid
	Y5	0.838	Valid
Medication Error	Z1	0.802	Valid
	Z2	0.873	Valid
	Z3	0.851	Valid
	Z4	0.801	Valid
	Z5	0.747	Valid

Source : Data Processed With SmartPLS version 4 (2024)

The evaluation results show that all indicators have been declared to meet the requirements of convergent validity with a value of 30 loading factors > 0.7 . Thus, all indicators are declared valid. This finding is confirmed by the fulfillment of the test with the following average variance extracted (AVE) :

Table 7 Convergent Validity Test with AVE

	AVE	Information
Workload	0.695	Valid
Work environment	0.702	Valid
Technology	0.666	Valid
Medication Error	0.701	Valid

Source : Data Processed With SmartPLS version 4 (2024)

The evaluation results show that all indicators in each construct/variable have exceeded the 0.5 limit and are therefore declared to meet the convergent validity requirements.

Discriminant Validity Test

The next indicator validity test is discriminant validity, and can be evaluated by *Cross Loading* where the squared correlation is > 0.7 and is greater than the correlation of other latent buildings (Ghozali, 2016). The results of the analysis are presented in the following table:

Table 8 Discriminant Validity Test with *Cross Loading*

Code	Workload	Work environment	Technology	*Medication Error*
X1.1	0.847	0.702	0.556	0.643
X1.2	0.893	0.669	0.577	0.756
X1.3	0.810	0.580	0.626	0.641
X1.4	0.812	0.472	0.574	0.727
X1.5	0.805	0.658	0.420	0.739
X2.1	0.652	0.849	0.697	0.611
X2.2	0.728	0.811	0.623	0.621
X2.3	0.540	0.777	0.689	0.657
X2.4	0.556	0.876	0.815	0.622
X2.5	0.625	0.871	0.761	0.560
Y1	0.587	0.710	0.851	0.638
Y2	0.595	0.780	0.847	0.619
Y3	0.584	0.811	0.830	0.612
Y4	0.501	0.616	0.819	0.609
Y5	0.493	0.661	0.838	0.576
Z1	0.661	0.668	0.589	0.802
Z2	0.743	0.561	0.547	0.873
Z3	0.703	0.602	0.545	0.851
Z4	0.718	0.541	0.551	0.801
Z5	0.603	0.623	0.747	0.747

Source : Data Processed With SmartPLS version 4 (2024)

cross loading test show that the correlation coefficient value between the same variables tends to be greater than the correlation value with different variables, this indicates that the indicators in the research variables have met the requirements of discriminant validity.

b. Reliability Test

Reliability testing is conducted to see the level of consistency of indicators as research instruments. Validity testing is conducted using the Cronbach's Alpha (CA) and Composite Reliability (CR) formulas, the test results are presented in the following table:

Table 9 Reliability Test

	Cronbach's Alpha	Composite Reliability	Information
Workload	0.890	0.919	Reliable
Work environment	0.893	0.921	Reliable
Technology	0.873	0.908	Reliable

Medication Error	0.893	0.921	Reliable

Source : Data Processed With SmartPLS version 4 (2024)

Cronbach's Alpha and Composite Reliability values must be greater than 0.70 although a value of 0.60 is still acceptable (Jogiyanto & Abdillah, 2015). Thus, all indicators in each construct have been declared reliable.

2. *Path* Analysis

Path Analysis includes *Direct Effect* and *Specific Indirect Effect* tests .

a. *Direct Effect* (Direct Effect)

Direct effect is the influence of one independent variable on the dependent variable that occurs without going through the mediating variable (*intervening*). In a path diagram , the direct effect is represented by one arrow that connects the independent variable directly to the outcome variable . In a path model, the direct effect is calculated using the regression coefficient that shows how much the change in the independent variable directly affects the dependent variable. If P Values <0.05, the conclusion is significant. While P Values> 0.05 provides the conclusion that there is no significant effect. (Jogiyanto & Abdillah, 2015).

b. *Indirect Effect* (Indirect Effect)

Indirect effects occur when the influence of an independent variable on a dependent variable is through one or more mediating variables. So, the independent variable influences the mediating variable first, which ultimately influences the dependent variable. If P Values <0.05, the conclusion is significant. While P Values > 0.05 provide the conclusion that there is no significant effect.

Table 10 *Path Coefficient Test*

	P *Value*	Information
Workload→ *Medication Error*	0.000	have a significant impact
Technology Workload→	0.732	no significant effect
Work environment→ *Medication Error*	0.986	no significant effect
Technology Work Environment→	0.000	have a significant impact
Technology→ *Medication Error*	0.258	no significant effect

Source : Data Processed With SmartPLS version 4 (2024)

the Path Coefficient test show that:

The P value *of* 0.000 for the effect of workload on *medication errors* indicates that there is a significant effect.

The P Value *of* 0.000 for the work environment on the use of technology indicates that there is a significant influence.

The P value *of* 0.732 for the effect of workload on technology use shows that there is no significant effect.

The P value *of* 0.986 for the influence of the work environment on *medication errors* shows that there is no significant influence.

The P value *of* 0.258 for the influence of technology use on *medication errors* shows that there is no significant influence.

c. *Specific Indirect Effect* (Specific Indirect Effect)

Specific indirect effects refer to indirect effects that occur through a specific path from the independent variable to the dependent variable through a specific mediator variable. If there is more than one mediator, we can calculate specific indirect effects for each separate path.

If P Values < 0.05 the conclusion is mediation. While P Values > 0.05 gives the conclusion that it does not mediate.

Table 11 *Specific Indirect Effect Test*

	P *Value*	Information
Technology →Workload→ *Medication Error*	0.803	No Mediating
Technology →Work Environment→ *Medication Error*	0.251	No Mediating

Source : Data Processed With SmartPLS version 4 (2024)

Specific Indirect Effect test show that:

P *Value* 0.803 technology use does not mediate the effect of workload on *Medication Error.*

P *Value* 0.251 technology use does not mediate the influence of the work environment on *Medication Error.*

The effect of workload on *medication errors*

Based on the results of the Partial Least Square test in Figure 11, the t-statistic value is 4.778 with a significance probability (P *value*) of 0.000 . It can be seen that the t-statistic value> 1.96 and P *value* <0.05, then H1 is declared accepted, meaning that workload has a significant effect on the occurrence of *medication errors* .

This indicates that the higher the workload, the greater the possibility of errors in administering medication at the Inpatient Pharmacy Depot of Bogor City Hospital. High workload can reduce the focus and concentration of officers, thereby increasing the risk of errors. These results are in accordance with the theory that excessive workload can cause physical and mental fatigue, which contributes to an increased risk of *medication errors* .

Research by Leydia G. Angkow et al (2019) also found that workload and work environment had a significant impact on medication errors, which supports the finding that workload management is very important in reducing medication errors.

The influence of the work environment on *medication errors*

Based on the results of the Partial Least Square test in Figure 11, the t-statistic value is 0.017 with a significance probability (P *value*) of 0.986 . It can be seen that the t-statistic value <1.96 and P *value* > 0.05, then H2 is rejected, meaning that the work environment does not have a significant effect on the occurrence of *medication errors* .

This could mean that work environment factors such as physical comfort, atmosphere, and support from management are not enough to influence the risk of medication errors at the Inpatient Pharmacy Depot of Bogor City Hospital.

Influence of workload on technology

Based on the results of the Partial Least Square test in Figure 11, the t-statistic value is 0.342 with a significance probability (P *value*) of 0.732 . It can be seen that the t-statistic value <1.96 and P *value* > 0.05, then H3 is rejected, meaning that workload does not have a significant effect on technology.

This shows that despite the high workload, the use of technology is not directly affected by the workload. Thus, the increase in workload does not automatically drive an increase in the use of technology at the Inpatient Pharmacy Depot of Bogor City Hospital.

The influence of the work environment on technology

Based on the results of the Partial Least Square test in Figure 11, the t-statistic value is 4.875 with a significance probability (P *value*) of 0.000 . It can be seen that the t-statistic value is > 1.96 and P *value* < 0.05, so H4 is accepted, meaning that the work environment has a significant effect on technology.

A supportive work environment actually encourages pharmaceutical workers to be more optimal in utilizing technology in the drug management process. Factors such as a conducive work atmosphere and support from management enable pharmaceutical workers to be more effective in adopting and using technology.

The effect of workload on *medication errors* through technology

Based on the results of the Partial Least Square test in Figure 11, the probability of significance (P *value*) is 0.803 . It can be seen that P *value* > 0.05 , then H5 is rejected, meaning that the use of technology does not mediate the effect of workload on *Medication Error*. This means that the use of technology does not strengthen or weaken the effect of workload on *medication error* .

The influence of the work environment on *medication errors* through technology

Based on the results of the Partial Least Square test in Figure 11, the probability of significance (P *value*) is 0.251 . It can be seen that P *value* > 0.05, then H6 is rejected, meaning that the use of technology does not mediate between the influence of the work environment on *Medication Error.* This means that the use of technology does not strengthen or weaken the influence of the work environment on *medication error* .

The influence of technology on *medication errors*

Based on the results of the Partial Least Square test in Figure 11, the t-statistic value is 1.132 with a significance probability (P *value*) of 0.258 . It can be seen that the t-statistic value <1.96 and P *value* > 0.05, then H7 is rejected, meaning that the use of technology does not have a significant effect on the occurrence of *medication errors* .

Although technology has been used, the results of this study indicate that the use of technology such as *e-prescribing* or CPOE (*Computerized Physician Order Entry*) in the Inpatient Pharmacy Depot is not optimal enough to reduce medication errors. This may be related to lack of training or limitations in the application of the technology.

According to research by Ferika Indrasari et al. (2021), the use of electronic prescriptions can improve the safety of drug administration, but its implementation requires better technological support and adequate training to optimize the results.

5. CLOSING

Conclusion

Based on the results of research that has been conducted on the influence of workload, work environment, and use of technology as *intervening variables* on *medication errors* at the Inpatient Pharmacy Depot of Bogor City Hospital, the following conclusions can be drawn:

1. Workload has been shown to have a significant effect on *medication errors* . The higher the workload faced by pharmacists, the greater the risk of errors in administering medication. This shows the importance of workload management to improve patient safety.

2. Work Environment has no significant effect on *medication error* , indicating that less conducive work environment conditions do not have a direct impact on the risk of medication errors. However, Work Environment has a significant effect on technology use, meaning a good work environment can better support technology implementation.
3. Workload does not significantly affect the use of technology. This shows that high workload does not directly increase the use of technology in operations at the Inpatient Pharmacy Depot of Bogor City Hospital.
4. The work environment has a significant effect on the use of technology at the Inpatient Pharmacy Depot of Bogor City Hospital. Supportive work environment conditions, such as a conducive work atmosphere and support from management, encourage pharmaceutical personnel to be more optimal in utilizing technology. The adopted technology allows the drug management process to be more effective, although it does not directly mediate the relationship between the work environment and *medication errors* . Technology has not been proven to significantly reduce the level of *medication errors* , but there is potential for improvement if training and application of technology are carried out better.
5. Technology use did not mediate the relationship between workload and *medication errors* , indicating that technology use has not played a significant role as a mediating factor in reducing errors due to workload.
6. Technology use does not mediate the relationship between work environment and *medication errors* , indicating that technology use has not played a significant role as a mediating factor in reducing errors due to workload or work environment.
7. The use of technology has not had a significant impact on reducing *medication errors* at the Inpatient Pharmacy Depot of Bogor City Hospital. This shows that even though the use of technology has been implemented, its use is still not optimal in reducing the risk of medication errors.

Suggestion

Based on the conclusions above, there are several suggestions that can be given to improve operational effectiveness at the Inpatient Pharmacy Depot of Bogor City Hospital:

1. RSUD Kota Bogor should consider steps to reduce the high workload at the Inpatient Pharmacy Depot, for example by adding workers or improving the distribution of tasks to avoid *overloading* the pharmacy staff. This can help reduce the risk of *medication errors* .
2. Although the use of technology has been implemented, research results show that the use of technology has not been able to significantly reduce *medication errors* . Evaluation of

the effectiveness of the use of technology is needed, such as the implementation of an electronic medical record system or *e-prescribing* , as well as improving training for staff to use the technology optimally.

3. Although the work environment does not directly affect *medication errors* , a conducive environment supports the implementation of better technology. RSUD Kota Bogor can create a more comfortable and supportive work environment, for example through more ergonomic spatial management and improving work support facilities.
4. In order for the use of technology to be more effective in reducing *medication errors* , more intensive training for pharmacists is needed. This training should include not only the use of technology but also an understanding of how technology can be used to reduce medication errors.
5. To improve patient safety, it is necessary to implement a periodic monitoring and evaluation system for *medication errors* that occur at the Inpatient Pharmacy Depot of Bogor City Hospital, and evaluate the causes so that corrective actions can be taken more quickly and accurately.

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