

A Lean Thinking Approach for Sustainable Improvement of Outpatient Pharmaceutical Service Processes In Hospital "X"

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INDEXING

Keywords:

Lean Thinking;
Pharmacy;
Waiting Time;
Value Added;
Nonvalue Added

ABSTRACT

Patients who have had an examination at the polyclinic will get medicine at the pharmacy, especially outpatients. The pharmacy installation is the last unit that determines the quality of hospital services, so the quality of pharmacy installation services will affect other related units. This study aims to identify value and waste with the Lean Thinking approach in pharmaceutical services, especially during waiting times, the time lag patients receive when submitting a prescription to receiving the prescribed drug. This part has 4 indicators: waiting time for finished drug service ≤ 30 minutes and concoction drugs ≤ 60 minutes, no drug administration errors 100%, customer satisfaction $\geq 80\%$, and prescription writing according to the formulary 100%. This research used a qualitative approach using the observational action process research method using the lean thinking method to photograph the process flow of outpatient pharmacy services conducted from mid-November to December 2022 in hospital X City of Palopo. The sample was 15 people who would receive the drug and conducted structured in-depth interviews. Data were analyzed using Excel with lean thinking. The study is categorized as lean and proposed improvements to the management support section. Lean thinking can create effective and efficient pharmaceutical governance in improving service quality.

Kata kunci:

Lean Thinking;
Farmasi;
Waktu Tunggu;
Nilai Tambah
Bukan Nilai Tambah

Pasien yang telah melakukan pemeriksaan di poli tentunya akan mendapatkan obat di apotek khususnya pasien rawat jalan. Instalasi farmasi unit terakhir yang menentukan kualitas pelayanan rumah sakit, sehingga kualitas pelayanan instalasi farmasi akan mempengaruhi unit terkait lainnya. Penelitian ini bertujuan untuk mengidentifikasi value dan waste dengan konsep pendekatan Lean Thinking dalam pelayanan kefarmasian terkhususnya pada waktu tunggu, jeda waktu yang diterima pasien pada saat menyerahkan resep hingga menerima obat yang telah diresepkan. Memiliki 4 aspek indikator yaitu, waktu tunggu pelayanan obat jadi ≤ 30 menit dan obat racik ≤ 60 menit, tidak adanya kejadian kesalahan pemberian obat 100%, kepuasan pelanggan $\geq 80\%$, penulisan resep sesuai formularium 100%. Penelitian ini dengan pendekatan kualitatif dengan metode observasional action process research dengan menggunakan metode lean thinking untuk memotret alur proses pelayanan di farmasi rawat jalan yang dilakukan pada bulan pertengahan bulan November ke Desember 2022 di Rumah Sakit X Kota Palopo. Jumlah sampel yaitu 15 orang yang akan menerima obat dan dilakukan wawancara mendalam secara terstruktur. Data dianalisis menggunakan excel dengan konsep lean thinking. Hasil penelitian dikategorikan lean dan dilakukan pengusulan perbaikan kepada pihak manajemen bagian penunjang. Dengan lean thinking dapat menciptakan tata kelola farmasi yang efektif dan efisien dalam meningkatkan kualitas pelayanan.

Article history: Received 2023-02-12; Revised 2023-03-31; Accepted 2023-04-03

INTRODUCTION

A hospital is a medical institution that provides individual medical services, including promotive, preventive, curative and rehabilitative services and inpatient, outpatient, and emergency services to achieve optimal, comprehensive, and elevated health status for the entire community (Kamalia, 2022). The 2015-2019 Ministry of Health Strategic Plan stated that health development is an initiative that all levels of Indonesian society must carry out. All must be aware of healthy living to increase motivation and abilities. The highest public health is an



investment in human resource development for social and economic productivity. With a strategy to expand the accessibility of medical services, optimize the referral system, and improve the quality of medical services, strengthen the independent development of medical services (Handayany, 2020).

One of the health services is pharmaceutical services provided by hospitals in connection with patient treatment, which is an important aspect of understanding patient satisfaction with treatment. HOSPITAL X Palopo City is inseparable from the role of pharmaceutical staff based on Law Number 36 of 2014 concerning Health Personnel, which explains that pharmaceutical staff includes pharmacists and pharmaceutical technicians, pharmacy graduates, intermediate pharmaceutical specialists, and pharmaceutical analysts. Hospital pharmacy services must be of good quality and provide good service to drug information received by patients to increase patient satisfaction. The service quality of pharmaceutical personnel must always be updated so that the information provided to patients is always up to date (Rikomah, 2017).

Scientific Research et al., 2022 customers and families benefit from shorter waiting times, as do medical, paramedical, and non-medical staff members and hospital administration. Efforts to reduce waiting time protect patients from delays in care and treatment and protect them from substandard care, adverse conditions, and endangering patient safety. According to (Noviani, 2017), various hospitals in Indonesia have implemented lean, such as the Palembang Charitas Hospital, which has shown benefits in waste disposal in the emergency room from 38 activities to 29 activities and increased added value by 17.97%. At Hermina Depok Hospital, 90% of non-value-added (waste) patients were found, while only 10% of hospital activities were added.

Wirandari & Utarini (2019), in their study on Lean Management to reduce waiting times, explained the potential for process improvement and, follow-up improvements and monitoring to ensure that waiting times meet the specified requirements. Wardani et al., (2023), with the Lean Hospital approach in optimizing hospital laboratory services, where the activity ratio for the two hospitals has a value-added below 30% so an unlean enterprise or not yet lean, so that the two hospitals propose improvements including reducing time patient waiting, clear directions to the laboratory, integrated hospital information system (SIMRS), as well as appropriate operational standards (SOPs).

Outpatient (ambulatory) service is one of the first levels of individual medical activities carried out as a functional unit in a polyclinic. It is currently one of the main concerns of hospitals worldwide because outpatient outpatients are more than outpatient hospitalization care (Rahmadani et al., 2022). The pharmacy installation is the last unit that determines the quality of hospital services, so the quality of pharmacy installation services will affect other related units. As a revenue center for a hospital, pharmaceutical facilities require special attention because pharmacy management makes a very important contribution to the quality and economy of the hospital. In this regard, pharmaceutical facilities must continue improving.

The waiting time itself is the time lag that the patient can accept when submitting the prescription until receiving the drug that has been prescribed (Karuniawati et al., 2016). The quality of pharmaceutical services can be seen from 4 aspects. These are the minimum indicators for assessing the quality of pharmaceutical facilities, namely waiting time for finished drug services ≤ 30 minutes and concocted drugs ≤ 60 minutes, no drug administration errors 100%, customer satisfaction $\geq 80\%$, prescription writing according to the formulary 100% (Minimum hospital service standards, the Republic of Indonesia Minister of Health Decree No.129/Menkes/SK/II/2008).

An electronic prescription (e-prescription) is an electronic means of writing prescriptions through an automated data entry process using specific software and an Internet connection to a hospital pharmacy department. Electronic prescribing systems use technology to improve prescription or drug order communication, assist in selecting, administering, and dispensing medications through information and decision assistance, and provide a thorough audit trail of all medications used. With paperless electronic prescribing, prescriptions can be sent directly to pharmaceutical devices that are accurate and easy to read for the convenience of patients, doctors, and pharmacists.

Convenience for doctors is to help doctors when writing prescriptions by providing information about the drugs to be prescribed and knowing the availability of drug stocks in pharmacies, helping doctors to prescribe drugs such as in the national formulary and hospital therapy formulary, can record drug use data, make reports more easily. easy and fast. Convenience for pharmacists is that it makes it easier for pharmacists to read prescriptions and prepare drugs, thereby shortening the waiting time for prescription services at pharmacies (Adrizar et al., 2019).

One of the obstacles to pharmacy drug services is the existence of a prescription queuing system in various polyclinics for BPJS (Social Security Administration Agency) patients and insurance or general patients, resulting in very long waiting times for pharmacy drug services. The most important problem for the service provider industry is waiting time)(Kovacevic et al., 2016). The inefficiency of the pharmacy queuing system and waiting time for drug services are problems that need to be addressed immediately (Bucci et al., 2016).

Every service, including health services, must refer to management theory because management theory can measure how well health service outcomes are implemented. Has it been running effectively or efficiently (Misbahuddin, 2020)? In implementing it in the era of disruption, innovation in the health sector with e-health applications can be measured through several important aspects, including value added (Muharam, 2019). Many companies have used the lean concept, which began to emerge in the 1950s, to increase added value and minimize waste in the industry—increasing quality, safety, and efficiency (Wati et al., 2021). Lean is a set of tools, management systems, and methodologies that can transform the way hospitals are organized and managed to reduce errors, shorten waiting times, remove barriers, and support

the efforts of medical professionals and staff members who aim to improve standards of care and patient care (Grabana, 2016). Lean principles in hospitals aim to increase efficiency and operational response time and eliminate waste, accompanied by the rapid discovery of current and future problems, continuous improvement, and a consistent and stable environment (Maulid, 2017).

The third edition of the Lean Hospital book, which is divided into two parts, presents the simplest and most elegant aspects of lean, according to Grabana (2016), originating from Toyota's culture, the first being total elimination of waste, waste, youth, or waste, which are all activities that do not help the process healing of patients. All waste must be avoided or minimized to save on hospital costs, increase patient satisfaction, and improve patient and employee safety. Examples of waste that often occur in hospitals are as follows: patient waiting time for examination by a doctor, patient waiting time for the next step, errors that endanger the patient, and excessive displacement and movement-for example, the location of the pharmacy and cashier are far away.

The second is respect for people. The respect referred to in lean motivates employees to carry out their work better and more constructively (Poksinska et al., 2013). Respect for people involves the leader's commitment and trust in his team members to help solve problems and reduce waste, inspires staff to care more about patients and the hospital environment without making them feel forced, and encourages collaboration between management and implementers. So there is no assumption that management creates a system, solves problems, and makes decisions while the implementing staff only carries out their duties (Restudana & Darma, 2022).

Lean thinking is a philosophical model that emphasizes reducing waste or non-value-added parts rather than one of the processes so that consumers get high value (Chan et al., 2014). Value is the key to lean thinking, the ability to respond quickly to consumer requests for a product or service so that the service is reasonably priced (Womack & Jones, 2015). Lean thinking maximizes resources as efficiently as possible. Health services are valuable and must be optimized for full service (Malik & Naeem, 2016).

Determination of value regarding the requirements must be met by an activity that provides added value with the Lean method, namely whether an activity adds value. It is classified as waste if it does not meet these requirements. The first consumer or customer must be willing to pay for the activity, the second activity or activity must change the product or service, and the three activities must be carried out correctly from the first time they are carried out. Some of the activities included in value-added (VA) and non-value-added are shown in the table below (Rahman, 2020)

Table. 1 Value added (VA) and Non value added activities

Unit	Role	VA Activity	NVA Activity
Pharmacy	Pharmacy Staff	Check the completeness of the guarantee file	Waiting for your turn to check the completeness of the file
Pharmacy	Pharmacy Staff	Drop off at verification counter	Waiting to be escorted to the verification counter
Pharmacy	Pharmacist	Drug verification process	Waiting at the verification counter
Pharmacy	Pharmacy Staff	Drop off at the drug preparation counter	Waiting at the verification counter after completing the drug verification process
Pharmacy	Pharmacy Staff	The process of preparing the drug	Waiting for the drug preparation process
Pharmacy	Pharmacy Staff	Drug labeling process	Waiting the drug labeling process
Pharmacy	Pharmacy Staff	Drug packaging process	Waiting for the packaging process of the drug
Pharmacy	Pharmacy Staff	Waiting the drug delivery process	Drug delivery process
Pharmacy	Pharmacist	Drug delivery process	-

There is often a lot of waste and inefficiency in hospital processes and activities. Hospital employees spend more time not doing basic activities. Waste or waste is divided into two groups, namely type one waste which is a work activity that does not create added value in the process of transforming inputs into outputs which currently cannot be eliminated because, for example, inspection, sorting and supervision, these activities do not bring added value, but in currently needed for a corrective purpose. This type of waste must be eliminated or reduced in the long run. The second type two waste is an activity that does not provide added value and must be eliminated immediately. These activities tend to produce defective or defective products, repetitive work, or re-work, or it can also be that these activities often occur with errors or errors that can be eliminated immediately. This type is usually called waste because its form is actual waste that can be identified and eliminated immediately (Restudana & Darma, 2022). Here are some types of waste (Lestari et al., 2020)

Table. 2 Type of waste

Types of Waste	Sources of Waste	Reasons for occurrence
Waiting (Waiting for medicine queue)	Pharmacy	The number of queues for drug requests immediately accumulates during peak hours, which is when several doctors start practicing simultaneously (usually at 10 o'clock and above) Computer for data entry Only one Data entry is not in order because there is no drug queue number The clerk stacked the entry-an prescriptions
Waiting (The clerk waits for the prescription paper that has been entered)	Pharmacy	The clerk piled up the finished medicine, not directly handing it over to the patient There is no special officer for prescription entry, the entry officer also helps enter drugs Computer for recipe entry only one unit
Motion (The officer stacks the finished medicine, not directly handing it to the patient)	Pharmacy	Prescriptions pile up at rush hour as doctors start practices simultaneously Many prescription requests make officers busy to put drugs until the pile of drugs in the basket is felt to be a lot and then the drugs are distributed to patients There is no special officer at the pharmacy front desk in charge of receiving and handing over prescriptions
Defects (Recipe entry error so it must be repeated)	Pharmacy	The clerk is not focused, in a hurry

Lean thinking in health services aims to focus continuously on how the suitability of health services can be provided efficiently, safely and with the highest quality, by turning waste into something of value. Therefore, this study aims to identify value and waste with the concept of Lean Thinking to measure the percentage value whether it is categorized lean or not lean with the results of in-depth interviews, so that improvements are proposed to the hospital management.

RESEARCH METHOD

This study uses an observational action process research method with a lean thinking method approach to photograph the flow of the service process at the outpatient pharmacy of X Hospital Palopo City in the period of November-December 2022. The object of the study was obtained from the results of observations for the assessment of waiting time in outpatient pharmacy pharmacy services, starting when electronic prescriptions were ordered from poly to drug delivery to patients, which was carried out on 15 people who received drugs. The data was analyzed using Microsoft Excel software.



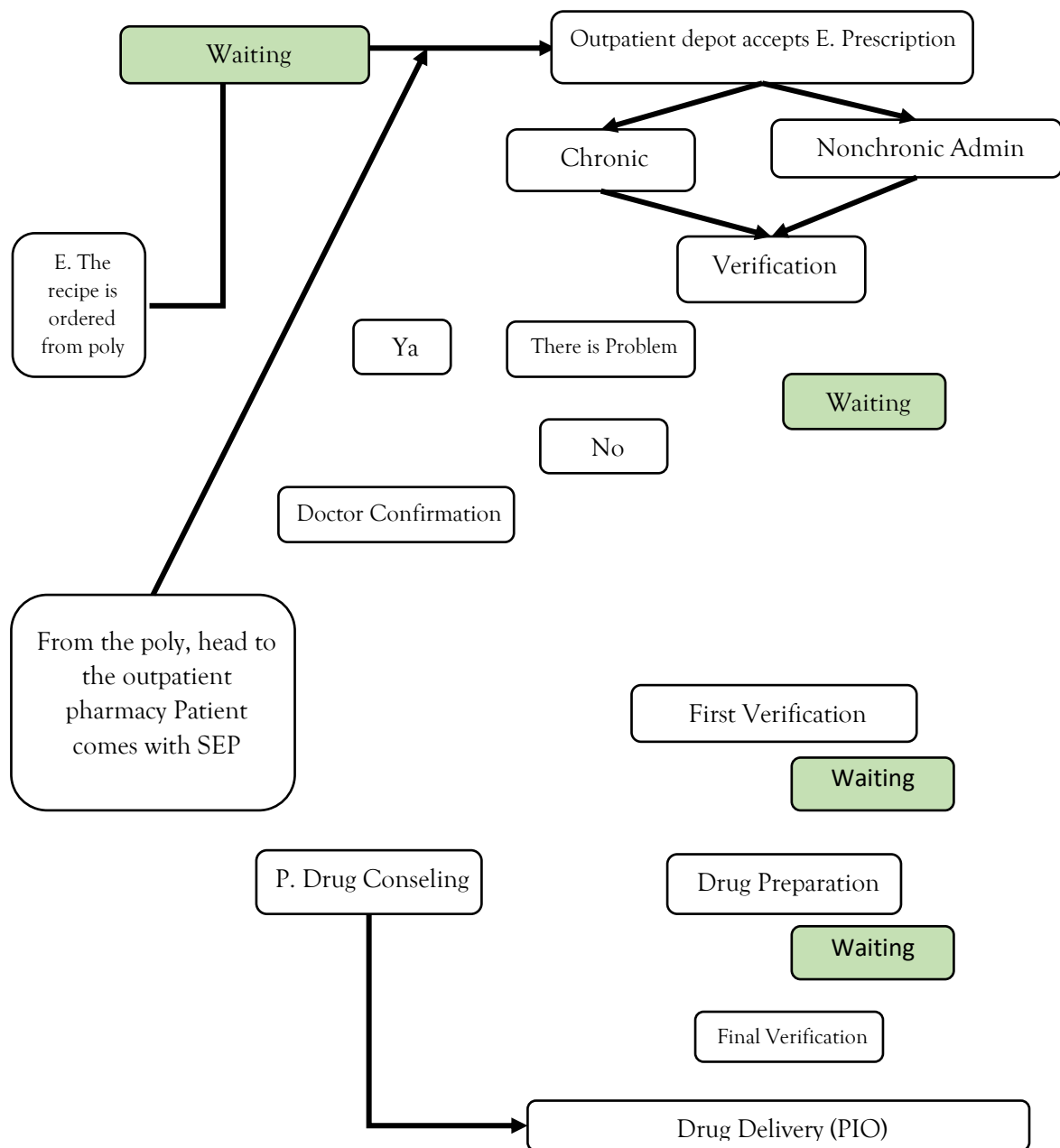
Furthermore, conducting structured interviews with the Head of Pharmaceutical Installation, Pharmacist in Charge of Outpatient Depot, Accompanying Pharmacist and Pharmaceutical Technical Personnel, then interviews with supporting management as consideration in the process of proposed improvements. Documents related to the process of Patient Prescription services at the outpatient pharmacy installation of Hospital X Palopo City Year 2022.

This study used 3 methods in the data collection process, namely: observation sheets, interview guidelines, and document review. Research instruments used for qualitative data collection are waiting time recording forms, stopwatches and stationery. The observation was carried out by direct observation of outpatient prescriptions, both concocted and non-concocted, which entered on Saturdays during working hours. Then the prescription service time is calculated using a stopwatch at each point that divides the service process into action components according to lean thinking tools that can provide value added (VA) and non value added (NVA) from the prescription flow at the outpatient pharmacy installation of Hospital X Palopo City in 2022. The results of the waiting time measurement will be entered into the waiting time recording form, starting the waiting time calculation by sitting in the prescription room and continuing to follow the prescription process from the patient submitting the prescription until the drug is ready to be given.

Interview guidelines, used to obtain information about waiting times for drug services, human resources, types of patients, types of prescriptions, drug availability, facilities and infrastructure, and hospital policies. Value is the key to the lean thinking approach to determine value in the outpatient pharmacy service process at Hospital X Palopo City including waiting time starting when receiving incoming prescriptions at SIMRS, prescription review (administration, pharmaceuticals, clinics), making e-tickets, preparing drugs, verifying, and submitting drug information. Semi-structured interviews are interview guidelines that can be rather long and detailed, although they do not need to be strictly followed. Interview guidelines focus on the subject of the specific area under study, but may be revised after the interview as new ideas emerge later. Despite the interviewer's best efforts to understand the participants' point of view, they must always maintain self-control to achieve research objectives and identify research topics (Purwanto, 2022) Document review is carried out by recording the necessary supporting data including patient process flows, archives of service standards of Hospital X. Palopo City, especially those related to research. The data collection instruments used in this study were observation procedures and interviews containing questions asked to selected informants. In this study, to maintain validity used is triangulation of data sources to check the consistency of information obtained from different sources and the triangulation method is used if the study uses more than one data collection method.

RESULT AND DISCUSSION

Process improvement can be achieved with the Lean concept applied in service-oriented hospital services; Value in lean is the main aspect of whether an activity adds value. Visually, the following is the flow of the outpatient pharmacy service process at Hospital X, Palopo City, so that the process will be better understood through the existing activity process.



Source: Hospital outpatient pharmacy documents, X City of Palopo

Picture 1. Process flow for outpatient pharmacy prescription services at Hospital X Palopo City.

From the observations, researchers observed where pharmacy workers met drug requests from an average of 15 times in one guard shift. From the existing process flow activities with a Lean thinking approach that has a focus on reducing waste or non-value added parts of one of the processes, consumers get higher value. The use of E-Prescription (electronic prescription) has been implemented in outpatient pharmacies of Hospital X Palopo City since 2022, with the existence of electronic prescriptions writing prescriptions through an automated data entry process using certain software with an internet network connected to the pharmacy, electronic prescriptions facilitate and improve the exchange of prescription or drug sequences, assist in the selection, administration, and supply of drugs by providing information to support decisions, and provides a robust audit trail for all medications used so prescriptions can be directly sent to the Installation Pharmacy is accurate and easy to read so as to provide convenience for patients, doctors and pharmacists. Convenience for pharmacists is to make it easier for pharmacists to read prescriptions and prepare drugs so as to shorten service waiting times at pharmacies (Adrizal et al., 2019).

In pharmacy services, the waiting time itself is the time lag that patients can receive from submitting prescriptions to receiving drugs that have been prescribed (Karuniawati et al., 2016). Value is the key to lean thinking, researchers observed 15 patients who would get drugs at the outpatient pharmacy of Hospital X Palopo City. Observations were made on Saturday where on that day there were finished recipes and concoction recipes, the data obtained was carried out the percentage of activities that were value added and non value added in Table 3.

Researchers made direct observations at the outpatient pharmacy of Hospital X Palopo City to obtain data as one of the tools to determine the composition of value added and non-value added activities. With a Lean Thinking approach according to Baehaqi (2022) which focuses on value where value must be considered according to patient service needs that aim to eliminate waste. The following is an explanation of the activities from the observations:

- a. Activity 1 (Polyclinic), patients come with a letter of participant legitimacy (SEP) to distinguish JKN participants (KIS / BPJS) or general to outpatient pharmacies, the waiting process begins when the nurse has made a prescription sacrifice from the poly with the aim of outpatient pharmacy and the pharmacy officer on duty will confirm the prescription (chronic and non-chronic). After confirming the prescription with the aim of the incoming outpatient pharmacy, a prescription review will be carried out according to the prescription queue (administration, pharmaceuticals, and clinics) then the officer prints the prescription.
- b. Activity 2 (Pharmacy), patients go to the outpatient pharmacy to receive e-prescriptions and the waiting process starts when the prescription has been reviewed and connected to the other computer to print drug e-tickets according to the number of drug items for each prescription

- c. Activity 3 (Pharmacy), the waiting process begins where the prescription has been printed complete with an e-ticket then the officer brings to the back of the drug preparation place. Then the officer prepares the medicine according to the prescription and makes a copy of the prescription (in one prescription sometimes there is a general prescription that is not covered)
- d. Activity 4 (Pharmacy), the waiting process starts when the medicine is ready and will be inserted into the respective medicine sack and attach the e-ticket according to the prescription. Furthermore, the prescription is carried out initial verification (correct patient, correct drug, correct dosage, correct route, correct time of administration, no duplication, no drug interactions)
- e. Activity 5 (Pharmacy, the waiting process begins when the prescription has been completed and the officer brings to the front of the prescription submission desk before being handed over, final verification is carried out (correct patient, correct drug, correct dose, correct route, correct time of administration, correct information, correct documentation, check drug expiration) then the call according to the prescription queue with the patient's name, then the prescription is submitted and IEC is given.

The value-added (VA) and nonvalue-added (NVA) activities can be seen in Table 4.

Table. 4 Value Added (VA) And Nonvalue Added (NVA) Activities

Process	Acceptance of Recipes at Simrs (NVA) and Review of Recipes: Administrative, Pharmaceutic and Clinic (VA)	e-Ticket (VA) Making	Drug Preparation (VA)	Verification (VA)	Delivery of Drug Information (VA)	Total (Second)
TOTAL NON-VALUE ADDED	7215	1751	1423	90	450	10929
TOTAL VALUE ADDED	2069	275	13645	1228	1910	19127
TOTAL LEAD TIME	9284	2026	15068	1318	2360	30056
PERCENTAGE OF VALUE ADDED	63.64%					
PERCENTAGE OF NON-VALUE ADDED	36.36%					

Source: Data Processed 2023



Based on Table 3, value-added pharmaceutical service activities were 63.64% and 36.36% non-value added. A hospital is said to be lean if the ratio between activities that provide value (added value) and activities that do not provide value/waste (non-value added/waste) reaches 30% (Wati et al., 2021). Restudana & Darma (2022) explained that applying lean values does not solely provide customer value. However, by identifying the waste, the results of its implementation can make improvements that increase value added by up to 44%. Research by Reza & Alwi (2023) shows that the waiting time for prescription drug services uses the Lean Healthcare approach at the Tanralili Installation Outpatient Pharmacy, Kab. Maros, with a non-value added > 30%, indicates that the service is ineffective and inefficient and there is a waste. Matters that affect patient waiting times and can potentially become waste include man factors (type of patient, lack of human resources, and presence of pharmacists with multiple positions), method factors (absence of directions and patient status), material & machine factors (patients who came together, types of prescriptions, drug availability at the Puskesmas, patient visit time, and incomplete drug prescriptions written by doctors) and environmental factors (unclear prescription reception and drug delivery counters).

Wardani et al (2023) mentioned that waste is a problem or disturbance that keeps arising, causing the service process to be not optimal. According to Khoirurakhmawati et al. (2019), one of the waste identification methods is the waste assessment model, which is a model that describes the relationship between seven wastes (O: Overproduction, P: Processing, I: Inventory, T: Transportation, D: Defects, W: Waiting, and M: Motion). From the observation, value added (VA) was 63.64% and non-value added (NVA) was 36.36%, so 3 types of waste were found, including:

1. The first is Waste Waiting caused by waiting in queues for pharmacy drugs, the number of queues for requests for drugs immediately piles up during peak hours, namely when several doctors start practicing simultaneously (usually 10 o'clock and above), secondly, sometimes the stock of medicines runs out even though the medicines must still be provided, so the staff pharmacy must contact the inpatient pharmacy and ICU pharmacy or the patient will be given a copy of the prescription to buy at an outside pharmacy to fill the vacancy, there are only two computers for data entry (chronic and non-chronic prescriptions) and sometimes the computer is damaged, the fourth is due to the duration of using SIMRS is common for errors and double job burdens due to limited human resources because it is influenced by spatial factors, the fifth recipe data entry is marked manually, the sixth paper for printing e-tickets and recipes often runs out, the seventh for concoction recipes where the tools for concoction are still lacking so to use it must queue.
2. Waste Motion, where there is a double prescription for prescription drugs so that the medicines prepared are returned by the inpatient and returned to their place by the staff.

3. Waste Defect where in the process of reviewing prescriptions in pharmaceutical services, if there is an incomplete prescription and you must consult a doctor, the pharmacy staff will contact the doctor again to confirm the completeness of the prescription. From the observational data, in-depth interviews with pharmacists in outpatient pharmacies were analyzed using the Root Cause Analysis (RCA) method. From the 5 whys diagram presented from the question "Why is the waiting time for outpatient pharmacy services long"? The researchers mapped out some of the main problems from long waiting times, where human resources are still lacking, sinks are not yet available at outpatient pharmacies, network constraints, and queues in using concoction tools.

From the results of the waste identification analysis and researchers conducted in-depth interviews with pharmacy officers who were in outpatient pharmacies, analyzing with the Root Cause Analysis (RCA) method. From the diagram of 5 whys presented from the question "why the waiting time for outpatient pharmacy services is long" Researchers mapped some of the main problems of long waiting times, where human resources are still lacking, sinks are not yet available at outpatient pharmacies, network constraints, and also queues in using concoction tools. The proposed improvements for purposeful interventions in health care are to focus on an ongoing basis. From the results of interviews with the management, the supporting department will make improvements in 2023 and also make procurements related to these problems, especially the addition of computers to outpatient pharmacies at Hospital X Palopo City and the use of simrsgos v2 to provide efficient and fast services (Putri & Akbar, 2019). This is in line with Aulia et al (2022) the lean approach can make hospitals more organized and organized so that they can improve the quality of service to patients by reducing waste, including the occurrence of errors, movement, transportation and poor service flow which leads to long service waiting times which are certainly not expected by patients.

CONCLUSION

The results of the above research, it can be concluded that the waste that occurs in the outpatient pharmacy service process is waste waiting, waste motion and waste defects. The cause of waste after analysis with diagram 5 whys is the lack of human resources and facilities and infrastructure that are still under repair at the hospital X City Palopo so that with a lean thinking approach, pharmaceutical facilities must continue to improve the quality of their services (continuous improvement).

The author is aware of the researcher's time limitations. As well as limitations in taking administrative data owned by Hospital X Palopo City causes more data processing based on observations and interviews with competent parties. Future research is suggested to develop other variables in the lean thinking approach followed by the intervention.

ACKNOWLEDGMENT

Thank you to Supervisor 1, Ms. Chitra Astar; Supervisor 2, Mr. Jasril and the Chairman of the Pharmacy Department, Ms. Ervia Ningsih, Universitas Muhammadiyah Palopo. Thank you to all Hospital X, Palopo City parties, who have provided direction, guidance, and assistance so that this research went well.

APPENDIX

This study uses an observational action process research method with a lean thinking method approach to photograph the flow of the service process at the outpatient pharmacy of Hospital X Palopo city in the period of November-December 2022. Observations were made by directly observing outpatient prescriptions, both concoctions and non-concoctions carried out on Saturdays during working hours. Then the prescription service time is calculated using a stopwatch at each point that divides the service process into action components under lean thinking tools that can provide added value (VA) and non-added value (NVA) from the prescription flow at the outpatient pharmacy installation of X Palopo City Hospital in 2022. The results of the waiting time measurement will be entered into the waiting time recording form. Researchers began calculating wait times by sitting in the prescribing room and following the prescribing process from the patient who submitted the prescription until the drug was ready to be administered. Furthermore, interview guidelines were used to obtain information regarding waiting time for drug services, human resources, types of patients, types of prescriptions, drug availability, facilities and infrastructure, and hospital policies.

Document review is carried out by recording the necessary supporting data. This secondary data includes patient process flows, service standard archives, outpatient pharmacy plans and other data at Hospital X Palopo City especially related to research. The data collection instruments used in this study were observation procedures and interviews containing questions asked to selected informants. In this study, triangulation of data sources was used to check the consistency of information obtained from various sources to maintain validity. The triangulation method is used if the study uses more than one data collection method. Data were obtained from document reviews, interviews, and observations.

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Table. 3 Observation results of outpatients

No	Description of Activities	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	Patient	TOTAL (Second)	Average
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
Detik																		
A	Administration of Recipes at SIMRS (NVA)	300	500	225	610	450	610	310	470	600	700	529	230	579	612	490	7215	481
	Prescription Review Administrative, Pharmastic (VA)	60	30	300	300	65	8	6	320	75	60	650	65	58	35	37	2069	138
	Lead time	360	530	525	910	515	618	316	790	675	760	1179	295	637	647	527	9284	619
	Waiting (NVA)	110	120	110	120	120	110	110	110	120	150	116	115	110	120	110	1751	117
C	Making e-tickets (VA)	10	15	10	10	13	5	5	7	30	10	25	30	60	30	15	275	18
	Lead time	120	135	120	130	133	115	115	117	150	160	141	145	170	150	125	2026	135
	Waiting (NVA)	98	50	30	55	60	89	100	110	98	189	122	125	100	130	67	1423	95
D	Drus Preparation (VA)	320	220	1200	320	800	1200	900	1110	900	320	1200	1110	1200	1000	1845	13645	910
	Lead time	418	270	1230	375	860	1289	1000	1220	998	509	1322	1235	1300	1130	1912	15068	1005
	Waiting (NVA)	30	67	55	34	65	76	80	91	80	86	87	60	55	40	69	90	6
E	Verification (VA)	10	15	15	10	15	10	8	10	30	10	15	115	55	900	10	1228	82
	Lead time	40	82	70	44	80	86	88	101	110	96	102	175	110	940	79	1318	88
	Waiting (NVA)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	450	30
F	(VA)	160	450	30	180	35	30	30	55	310	160	300	65	55	35	15	1910	127
	Lead time	190	480	60	210	65	60	60	85	340	190	330	95	85	65	45	2360	157
	Total Long Process	1428	1997	2230	2279	2103	2778	1889	2783	2873	2415	3603	2175	2881	3544	3096	57752	3850
	Minute	24	33	37	38	35	46	31	46	48	40	60	36	48	59	52	963	64

Source: Data Processed 2023