

# Efficiency of outpatient service at three health centers

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## Efficiency of Outpatient Service at Three Health Centers in Palembang City, Indonesia

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### ABSTRACT

**Background:** Health center (it is called Puskesmas) is a health facility that provides basic health services through outpatient units. In an effort to improve the efficiency of outpatient service, the health center could apply the Lean Concept. The aim of this study was to analyze efficiency of outpatient service process at three health centers in Palembang city, Indonesia.

**Method:** This was a descriptive study. The unit of analysis was outpatient activity at three health centers in Palembang city, Indonesia including: Puskesmas Dempo, Puskesmas Merdeka and Puskesmas Pembina. We used direct observation technique for collecting data. A total of 300 patients with national health insurance were observed and 100 patients for each health center using accidental sampling.

**Results:** The non value added (NVA) activity at most in each health center was service waiting time. Buildup of patient files was found in all health centers, while stock out of medicine was still found when several patients submitted prescription in Puskesmas Pembina. Time efficiency of outpatient services in Puskesmas Dempo, Puskesmas Merdeka and Puskesmas Pembina respectively was: 61.76%; 62.63%; 62.23%. In other words, the time spent on waiting activities included in the category of NVA was respectively: 32 minutes 30 seconds, 26 minutes 25 seconds, and 12 minutes 3 seconds.

**Conclusion:** The efficiency of outpatient services in three health centers where research was conducted was moderate category. It can be improved by reducing the waiting time in each activity during the service process.

**Keywords:** health center, outpatient, lean concept, efficiency

### Introduction

Healthcare organizations face many challenges, including service quality and patient satisfaction. Health center (it is called Puskesmas) is a health facility that organizes public health and primary healthcare, with more emphasis on promoting and preventive efforts to achieve the highest degree of public health in the its working area. Health center provides basic health services through outpatient

The quality of health services at health center may be indicated by patient satisfaction. Waiting time is an activity that can affect the level of patient satisfaction to outpatient service. The most problem that arise in outpatient unit is waiting time during outpatient flow. Besides, in implementation of outpatient services there are still found waste. In dealing with waste that occurs in patient service can be used using Lean concept. Lean itself is defined as a method to identify waste in service and to measure efficiency of service waiting through categorizing service activities into value added activity (VA) and non value added activity (NVA). In an effort to improve the efficiency of outpatient services, lean method is used as a way to minimize medical errors and increase the utilization of available resources to provide the best service to patients.

The concept of lean can be applied in healthcare centers, such as clinics, health centers and hospitals. Several previous studies in Indonesia described lean

application to healthcare providers including hospital or private clinic outpatient, hospital pharmacy unit and emergency department<sup>(1,2,3,4)</sup>. The aim of this study was to analyze efficiency of outpatient service process at three health centers in Palembang city, Indonesia.

**Methods**

This was a descriptive study. This study took place in the outpatient units of three health centers in Palembang city, Indonesia including: Puskesmas Dempo, Puskesmas Merdeka and Puskesmas Pembina. We used direct observation technique for collecting data. A total of 300 patients with national health insurance were observed and 100 patients for each health center using accidental sampling.

**Results**

Respondents of this research were patients with national health insurance in outpatient unit of Puskesmas Dempo, Puskesmas Merdeka, and Puskesmas Pembina. The characteristics of patients who became research respondents were as follows:

**Table I. Respondents Characteristics**

Variables	Frequency		
	Puskesmas Dempo	Puskesmas Merdeka	Puskesmas Pembina
Age			
<30 years	39 (39%)	9 (9%)	25 (25%)
≥30 years	61 (61%)	91 (91%)	75 (75%)
Sex			
Male	21 (21%)	0 (0%)	5 (5%)
Female	79 (79%)	100 (100%)	95 (95%)
Education Level			
Elementary school	5 (5%)	22 (22%)	21 (21%)
Junior high school	10 (10%)	18 (18%)	20 (20%)
Senior high school	49 (49%)	48 (48%)	47 (47%)
University	36 (36%)	12 (12%)	12 (12%)
Working			

status	45 (45%)	20 (20%)	19 (19%)
Employee	55 (55%)	80 (80%)	81 (81%)
Not employed			
Married status	69 (69%)	87 (87%)	88 (88%)
Married	31 (31%)	13 (13%)	12 (12%)
Not married			
Patient status	74 (74%)	83 (83%)	83 (83%)
More than one time visit	26 (26%)	17 (17%)	17 (17%)
First time visit			

Source: Primary data of research (2019)

Table I above shows that the majority of patients in the three health centers where this study was conducted was over 30 years old (respectively at Puskesmas Dempo, Puskesmas Merdeka and Puskesmas Pembina as many as: 61 respondents (61%), 91 respondents (91%) and 75 respondents (75%)). There were more female patients than male patients at each health center, respectively 79 patients at Puskesmas Dempo, 100 patients at Puskesmas Merdeka, and 95 patients at Puskesmas Pembina. Almost a half of respondents in all three health centers had completed education at senior high school (Puskesmas Dempo as many as 49 people, Puskesmas Merdeka as many as 48 people, and Puskesmas Pembina as many as 47 people). The majority of patients with national health insurance scheme in all three health centers were not employed, married and obtaining outpatient services more than once.

**Outpatient Flow**

To identify outpatient service activities in the three health centers, we conducted direct field observations. The flow of services in the three health centers includes: patient registration, physical checking by a general practitioner, prescription service at the pharmacy unit. But at Puskesmas

Dempo, one step was added, namely patient consultation with a general practitioner and a nurse after completing physical checking stage.

**Analyzing Value Added and Non-Value Added Activities at Outpatient**

Based on the research results, value added and non-value added activities were identified as follows:

1. Patient registration, where the VA activity is a registration process, while the NVA activity is patient's waiting time until a patient to be asked for completing the registration document.
2. Physical checking, where the VA activity is physical checking process by a general practitioner, while the NVA activity is patient's waiting time until a patient to be asked to enter doctor room for physical checking.
3. Consultation, where the VA activity is consultation process, while the NVA activity is patient's waiting time until a patient to be asked to consultation service
4. Prescription service, where the VA activity is prescription service at pharmacy unit, while the NVA activity is patient's waiting time until getting the prescribed drugs.

The time of outpatient service at the three health centers where research was conducted is presented in the following table:

Table II. Average Time of Outpatient Service

Activities	Average time at Puskesmas Dempo (second)		Average time at Puskesmas merdeka (second)		Average time at Puskesmas Pembina (second)	
	VA	NVA	VA	NVA	VA	NVA
Patient Registration	428	92	362	85	352	63
Physical checking	1,321	541	1,458	783	408	418
Consultation	727	538	-	-	-	-
Prescription service	674	779	836	717	431	242
Total of average time	3,150	1,950	2,656	1,585	1,191	723
	5,100 (85 minutes 0 second)		4,241 (70 minutes 41 seconds)		1,914 (31 minutes 54 seconds)	

Source: Primary data of research (2019)

Table II illustrates that the total of average time spent by each respondent to finish outpatient services categorized by value added (VA) and non value added (NVA) activity at Puskesmas Dempo, Puskesmas Merdeka and Puskesmas Pembina respectively was: 85 minutes 0 second, 70 minutes 41 seconds and 31 minutes 54 seconds.

**Efficiency of Outpatient Service**

To assess efficiency of outpatient service at health center, PCE (Process Cycle Efficiency) formula can be used<sup>(5)</sup>. PCE is the percentage of comparison between the average total time for VA activity and the average total time for outpatient service. Using this formula, the respective values of outpatient efficiency at Puskesmas Dempo, Puskesmas Merdeka and Puskesmas Pembina were: 61.76%; 62.63%; 62.23%. In other words, the time spent on waiting activities included in the category of NVA was respectively: 32 minutes 30 seconds, 26 minutes 25 seconds, and 12 minutes 3 seconds.

**Waste Analysis of Outpatient Service**

The following table 3 is result of observations on the outpatient service process to 300 respondents in the three health centers where study was conducted.



**Table III. Frequency of Waste during Outpatient Service**

Name of Health Center	Category of Waste	Frequency (times)
Puskesmas Dempo	Waiting time for patient registration	11
	Waiting time for physical checking	25
	Waiting time for prescription service	10
	Personal activity by a health officer	6
	Buildup of patient documents	7
	Reconfirming prescription to doctor due to unreadable writing /other reasons	1
Puskesmas Merdeka	Waiting time for prescription service	42
	Personal activity by a health officer	4
	Buildup of patient documents	4
Puskesmas Pembina	Excessive information to patient	3
	Waiting time for patient registration	3
	Waiting time for prescription service	2
	Personal activity by a health officer	11
	Stocking out of medicine	8
	Buildup of patient documents	10
	Reconfirming prescription to doctor due to unreadable writing/other reasons	2

Source: Primary data of research (2019)

Table III describes the non value added (NVA) activity at most in each health center is service waiting time including waiting during patient registration, physical checking and prescription service at pharmacy unit. Buildup of patient files was found in all health centers, while stock out of medicine was still found when several patients submitted prescription in Puskesmas Pembina.

**Discussion**

In general, the flow of outpatient services in observed health centers was not

complicated including patient registration, physical checking and consultation, and prescription service. The observed health centers are located in urban areas therefore there were a large number of patients with higher education background. Majority of respondents who used outpatient service more than once were women, not employed, and have married. Outpatient at health centers opened in the morning therefore allowing a large number of visits from patients who were not working.

Some activities in the outpatient service consist of value added activities and non-value added activities. Non-value added activities are also known as waste. Waiting time is a type of non-value added activity that can be observed to determine the efficiency of outpatient services. The less wasteful activities, outpatient service will produce high time efficiency. Lean strategy is applicable in managing the improvement of the service process to all organizations. Lean could be implemented in the activities identification of health care and removal of waste to obtain more valuable outcome with less input.

A principle thinking of lean concept is the reducing of waste within an operation. Waste is all activities without producing value. Waste can come in the form of method, time, material and human resource. But it may also be related to the utilization of talent or skill of staffs. By eliminating waste, only value added activities will be produced at each phase of service. Lean method categorized eight types of waste within an operation; the Toyota Production System conceived seven wastes, and in the 1990s an eighth added by the Western World since it adopted lean thinking.

This present study illustrated the findings of the efficiency of outpatient service at three health centers in Palembang City, Indonesia. The observations yielded a number of interesting findings. In this study, we observed type of waste during outpatient

service at primary health centers and calculated time efficiency of service at outpatient unit. Generally, the outpatient services were not optimal because waste was still found in terms of patient waiting time. A previous work discussed the implementation of lean thinking to processes at hospital emergency department and its impact on services efficiency and reducing waiting times<sup>(6)</sup>. According to Kovacevic *et.al.*<sup>(7)</sup>, several papers have described successfully developed lean program to reduce waiting time in health care and it could be significantly provide beneficial value for patients and hospitals.

A narrative review has conducted to describe lean application and influencing factors for the success of lean initiative based on international studies such as a vision and good leadership in healthcare organizations<sup>(8)</sup>. Another recent publication summarized and analyzed 23 qualitative studies regarding effective lean leadership and customer value. A key finding of the analysis from these studies was improvement culture as a leadership requirement for lean implementation in healthcare<sup>(9)</sup>. Regarding what requirements need to be managed in lean initiative, a controlled interrupted time series study highlighted an important tension between promoting staff ownership and providing direction<sup>(10)</sup>.

Lean initiatives have been successfully implemented to the healthcare organizations both hospitals and primary health centers to value their service. A review literature was conducted in 2018 has highlighted there are many publications regarding lean implementation in hospital to improve quality of service with a total of 75.4% of the sample analyzed processes or services<sup>(11)</sup> and other authors analyzed implementation of lean concept in primary care<sup>(12,13,14)</sup>.

To date, 7<sup>th</sup> publication has been conducted on implementation of lean in community health center but a research in

California has conducted regarding this topic. Obtained result from the research was some barriers during lean implementation and effective communication concerning timeline of implementation was an important step to manage the transition<sup>(15)</sup>.

### Conclusion

The efficiency of outpatient services in three health centers where research<sup>(11)</sup> was conducted was moderate category. It can be improved by reducing the waiting time in each activity during the service process. Lean is an applicable concept in healthcare settings that may offer improved efficiency and supporting from all organization members is important.

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