



# Analysis of Factors Affecting Waiting Time Outpatient BPJS HKBP Balige Hospital

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**Abstract.** RSUD HKBP Balige is one of the private hospitals that has been working with the BPJS since 2014. The challenge for hospitals today is how the available resources can provide the best service with a low-cost operational service process. One thing that can be improved is patient satisfaction, which can be seen in the patient's waiting time. Waiting time is the time the patient spends waiting from the time he arrives to being examined by a doctor. Based on observations and interviews, the waiting time for outpatients at RSUD HKBP Balige is 2–3 h, while the standard waiting time for outpatients based on Keputusan Kemenkes No. 129/Menkes/SK/II/2008 is  $\leq 60$  min. This study aims to determine what factors affect the length of waiting time for outpatients in RSUD HKBP Balige and are grouped using Root Cause Analysis. Based on observations, there are queues at several points of patient service, so simulations are performed to determine the performance of the queuing system using Monte Carlo Simulation. The results of this study indicate that the factors causing waiting time are the length of time for registration, the length of time for searching and delivering medical records, and the length of time waiting for the doctor. For solutions offered based on Root Cause Analysis are: applying online or telephone registration, applying e-medical records to patient medical records, installing BPJS registration counter signs, enforcing databases that can be accessed offline if signal disturbances occur, and cleaning the registration counter area BPJS 10 min before the service hour starts.

**Keywords:** Outpatients · Waiting Time · Root Cause Analysis · Queue · BPJS

## 1 Introduction

According to the World Health Organization (WHO), the hospital is part of an organization engaged in the social and health fields, which has the function to provide complete (comprehensive) services, cure disease (curative), and prevent illness (preventive) for the community. Until 2021, there were 3,120 hospitals in Indonesia, consisting of 2,522 general hospitals and 598 special hospitals. Private hospitals also contributed significantly to the growth of hospitals in Indonesia due to the increasing demand for specialized medical services and the increasing population of Indonesians. A total of 1,151 hospitals are owned by the central, provincial, district/city governments, and the TNI/POLRI; BUMN has as many as 36 hospitals and 1,933 privately owned hospitals. In the period 2015–2021, there was an increase in the number of hospitals from 2,488 in 2015 to 3,120 hospitals in 2021 (by 25%) [1].

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HKBP Balige General Hospital (RSU Balige) is a hospital located in Balige District, North Sumatera, which is owned by the HKBP. For outpatient services, RSU HKBP Balige provides 11 outpatient services consisting of a dental, pediatric, internist, surgical, BKIA, physiotherapy, neurology, HD, pulmonary, mental, and ENT clinics. The total number of outpatients in January–December 2019 was 17,589 people (the data from interview). RSU HKBP Balige is one of the private hospitals that has collaborated with BPJS since 2014 to provide services to the community.

Since 2014, Indonesia has entered an era where social security is being implemented through the National Health Insurance (JKN) program. According to Law no. 44 of 2004, the JKN program is a program that guarantees the cost of health care, as well as the fulfilment of basic health, which is held nationally in cooperation mandatory by all Indonesians by paying regular contributions or the contributions, are paid by the government to the non-profit health social security administering body, namely BPJS Kesehatan (Indonesian Health Insurance Information Center, 2020). The BPJS carries out the implementation of this health insurance program. BPJS Kesehatan cooperates with government or private health facilities to run the program for JKN participants. Health facilities consist of 3 health facilities, first-level health facilities, advanced health facilities, and supporting health facilities. In 2020, the government allocated a National Health Insurance (JKN) budget of Rp. 48.8 trillion, this value increased by 83% from the previous year, which was only Rp. 26.7 trillion [2].

The challenge for hospitals today is how with existing resources, they are able to provide the best service with a low-cost operational service process. This allows hospitals to remain competitive in the market. The increase in the number of hospitals increases the higher hospital density, so there will be more competition [3]. A well-designed healthcare system provides timely and convenient access to health services for all patients [4]. Things that can be improved are patient satisfaction and resource management. One of the ways in which patient satisfaction can be seen is how long they wait until a doctor examines them. Patients assume that they spend too much time waiting, from registering to being reviewed by medical personnel, indicating that the hospital has not fully paid attention to the service quality. One of the patient's considerations before deciding which hospital to visit is the waiting time. For outpatient waiting time, the government, through the Ministry of Health, has set a minimum service standard, namely the Decree of the Ministry of Health Number 129/Menkes/SK/II/2008, which is 60 min.

From the results of observations and interviews, patients will wait 2–3 h from coming and registering to get an examination by a doctor. Therefore, the authors will analyze the factors that have the potential to cause long waiting times for patients in outpatient units to meet minimum service standards by using root cause analysis. In this case, the causes of medical personnel, non-medical personnel and patients themselves will be discussed. Finally, the results of this study will provide recommendations for minimum high time.

## 2 Literature Review

A well-designed healthcare system provides timely and convenient access to health services for all patients [4]. Research by Ghazali, Abd Manaf [5] shows that public healthcare in Malaysia is experiencing excess demand due to the difference in costs between

public and private healthcare so that better management is needed to reduce patient boredom while waiting. The same thing happened in Vietnam as stated by Nguyen, Yamamoto [6] and in Iran as the research results from Hashemi, Asiabar [7]. According to the factors that affect waiting time are old age, visiting internal medicine departments, early registration time, and undergoing blood tests. Various studies have been conducted in order to identify the factors causing waiting time and ways to optimize service time. Research by Sun, Lin [4] conducted a longitudinal study to see the relationship between intervention on waiting times and patient satisfaction and found that intervention to reduce waiting times increased patient satisfaction. Research by Chen, Li [8] found that through simulation results, by making an appointment system, the waiting time of outpatients will be significantly reduced. Research by Mardiah and Basri [9] shows a strategy that can be considered to reduce outpatient waiting time is applying “doctor on call” while still paying attention to patient flow and doctor capacity.

Based on previous research, this study will fill the gap by determining the factors that affect the waiting time of BPJS outpatients because BPJS service costs have more patients than non BPJS.

### 3 Research Method

Root cause analysis is a method commonly used to identify and resolve problems or discrepancies to get to the root cause of the problem. RCA can be used to correct or even attempt to eliminate the cause and prevent the problem from recurring [10]. RCA is often used by service and manufacturing companies to find solutions for continuous improvement. The repair is done by analyzing the possible causes.

Root cause analysis helps find long-term solutions. Some organizations often solve a problem with a short-term solution that results in workers having to make quick repairs but will repeat the same task over and over again. This, of course, reduces the effectiveness of work. Therefore, it is necessary to identify the causes in-depth and not just identify the symptoms.

One way to prepare an RCA is to brainstorm or conduct interviews with related parties [10]. The steps for making an RCA are as follows: 1. Define the problem by defining the problem and what happened and explain specific symptoms. 2. Collecting data. To ensure that the problem really occurs, data collection is carried out and analyze the impact of the problems that occur 3. Identify potential causes by describing the sequence of activities that lead to the problem and describe other problems that arise following the emergence of the main problem, 4. Identify the root cause by describing the real reason behind the emergence of the problem, and 5. Provide suggestions for improvements/solutions by describing things that can be done to reduce, prevent and even eliminate existing problems and describe the risks of implementing the solution.

Data collection is a series of activities carried out to obtain the information needed to achieve the objectives of a study [11]. Data collection methods are important because by collecting data, the author will get a true and reliable picture and information. The data collection method for this research is by conducting observations and interviews. Observation is a data collection technique by directly observing the research object closely and seeing the activities that take place in it. Observation is done by observing

and recording the symptoms seen in the object in a structured and systematic manner. The observations made in this study were to observe and examine directly to see the factors causing waiting time and queuing conditions in the outpatient unit of the internal medicine section of the HKBP Balige General Hospital. Interview is the process of collecting data by conducting oral questions and answers with related parties face to face and listening directly to information or information [12]. Interviews were conducted to obtain more in-depth information [13]. Researchers will conduct interviews with parties directly involved with the outpatient service process to obtain the factors that cause waiting time.

## 4 Results

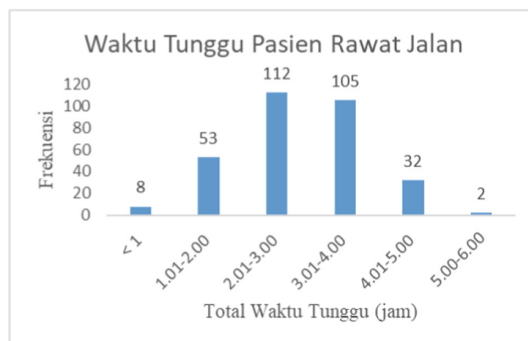
Based on the results of interviews and observations that have been made, the problem with the Internis Polyclinic is the waiting time for patients that exceed the standard set by the Ministry of Health (>60 min). The total waiting time for patients can be seen in Fig. 1.

It can be seen from 8 days of observation with the number of 312 outpatients; 112 have a total waiting time of 2–3 h. Meanwhile, there were only eight patients who had a waiting time of less than 1 h. 2 patients even had a waiting time of 5–6 h. Patients have a waiting time of less than 1 h because some of them come to register at 11.00 WIB, so the doctor is already there. Some of these patients with a waiting time of less than 1 h got a faster turn for calling because the patient before they had to go to another unit, such as a laboratory or was not in place, so they didn't listen to the serial number dialling.

After the authors conducted observations and interviews with several related parties, the factors that caused the length of patient waiting time were as follows as shown in Fig. 2.

### A. *The doctor who came not on time*

The reason the doctor came late was that he first checked the inpatients. This results in patients not immediately receiving a doctor's examination after carrying out the administrative process. This causes some patients to feel bored and even decide to return home first.



**Fig. 1.** Total Patient Waiting Time

### B. *The administrative process at the old BPJS counter*

Based on the service process that has been described previously, another factor that causes long waiting times is at the administrative stage at the BPJS counter. Patients who come before service hours increase the patient waiting time. Constraints that often occur are patients who do not bring complete files. Some patients also bring referral letters that are no longer valid. Some also carry referral letters to the wrong hospital. Patients also sometimes come not on schedule, such as old patients who don't come on a predetermined day or patients who don't come on the doctor's schedule so patients can't get services even though they have been waiting for a long time. Some patients also entered the wrong queue, whereas general patients entered BPJS patient registration. This is because the BPJS counter marker is too small and cannot be seen from outside the hospital.

In addition, the number of BPJS administrative officers is only one officer who serves, while there are two computers that can be used. Network errors also often occur, so patients cannot do fingerprints, and data cannot be processed. At times like this, usually, the officer will wait for a while. If it is long enough and the queue is long enough, the officer will make a SEP manually for the patient.

### C. *The process of searching for and delivering medical records is long*

Another factor that causes waiting time is the length of searching for medical records. In some cases, there were human errors that made medical record storage errors. With the number of medical records officers only two people searches medical records cannot be done quickly.

Another factor is the number of file delivery officers who are still lacking. During the observation, the patient assistant officer was in charge of delivering the files. The officer must take the SEP file from the administrative counter, deliver it to the medical record, deliver the file back to several polyclinics and serve patients if they need assistance, such as a wheelchair. With that many job desks, patient assistants must move quickly so that patient files can get to the intended polyclinic. In some cases encountered during the study, patients had received calls at the polyclinic while the files had not yet arrived. This makes the patient have to wait a while.

Based on the results of observations and interviews regarding waiting times which have been described in the previous chapter, the factors that cause waiting times are grouped using the Fault Tree. A fault Tree is a graphical technique that describes a systematic explanation of several possible causes in a system that cause something undesirable to happen. Fault Trees can combine the types of errors that occur due to systems and humans [10]. The following is a Fault Tree that describes the factors that cause long patient waiting times.

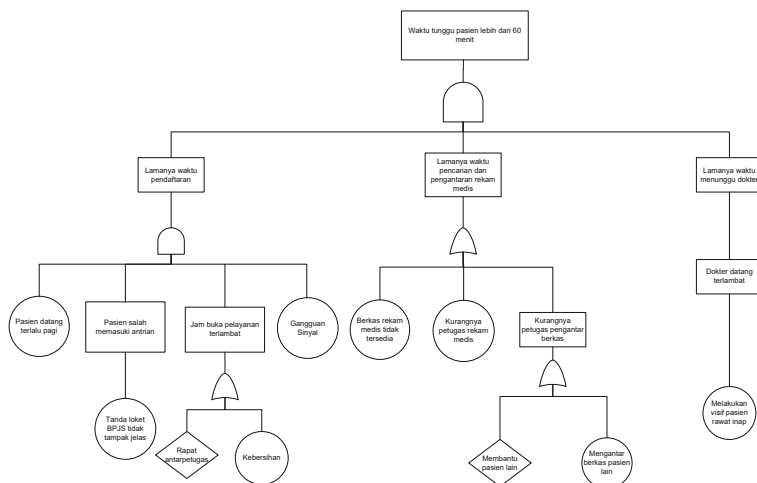


Fig. 2. Root Cause Analysis Waiting Time

## 5 Discussion

The most significant factor that affects the waiting time is the doctor who doesn't come on time. This is because there is only one doctor on duty every day for outpatients and inpatients. The system is that the doctor first examines the inpatient internist patient, and then after completion, the doctor will conduct an examination of the outpatient. This makes the patient not get an immediate examination shortly after registering at the BPJS counter but must wait 2–3 h.

In the administrative process at the BPJS counter, there is only one officer who serves the administrative process, while there are two computers that can be used and can shorten patient waiting time. Delays also often occur. This is because the officers must attend the meeting first. After arriving at the counter, the clerk still had to do cleaning, such as wiping the table and sweeping, which did the service late for about 10–15 min. Then in some cases, signal interference occurs, which results in the administration process being unable to be found. If this happens, the hospital and the patient can only wait until there is no signal interference. Another thing that happened was that some patients did not know where to register for BPJS patients and general patients. Some general patients even registered at the BPJS counter.

In terms of patients themselves, several things that cause long waiting times are those who come too early, even half an hour before service hours start. This is because they want to get a small queue number. Then some patients were found not to know when their schedule had to be checked again. The schedule of the attending physician on that day and the referral letter they had were no longer valid.

In terms of the medical record stage, based on the results of interviews, several things that can cause long waiting times are the lack of officers in the medical record room, and there are only two officers to serve patients from several polyclinics. Then medical records sometimes cannot be found due to the misplacement of files. Another thing is the lack of patient assistants to deliver medical records to the polyclinic.

The above will result in queues at the BPJS administration counter and at the Internist Polyclinic. The BPJS administration counter usually has a long queue until around 09.00 WIB. Meanwhile, at the Internis Polyclinic there will be queues while waiting for the doctor to arrive.

## 6 Conclusion

Based on research that has been carried out in the outpatient unit of the HKBP Balige General Hospital, the following conclusions can be drawn: Based on the RCA, the factors that cause waiting time are the length of time for registration, the length of time for searching and delivering medical records, and the length of time waiting for a doctor.

Suggestions for further researchers are as follows:

1. This research can be continued by calculating the waiting time for patients at the service stage after examinations by doctors such as laboratories and pharmacies.
2. Similar research can be conducted in other service units such as inpatients, radiology, ICU, and ER in order to find out what factors affect patient waiting time and provide suggestions for improvement.
3. This research can be continued by calculating the cost of each of the suggestions given.

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